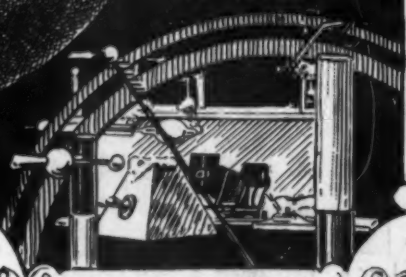
N Y STATE MEDICAL LIBRARY

Vol. XIII. No. 2. August, 1903.

THE AMERICAN X-RAY JOURNAL

A MONTHLY DEVOTED TO THE PRACTICAL APPLICATION OF THE NEW SCIENCE AND TO THE PHYSICAL IMPROVEMENT OF MAN.



CHICAGO, ILL.

DUPLICATE

THE NEW YORK ACADEMY OF MEDICINE -LIBRARY-

Preparation—Par Excellence

"Fellows' Syrup of Hypophosphites"

CONTAINS

Hypophosphites of Iron, Quinine, Strychnine, Lime, Manganese, Potash.

Each fluid drachm contains Hypophosphite of Strychnine equal to 1-64th grain of pure Strychnine.

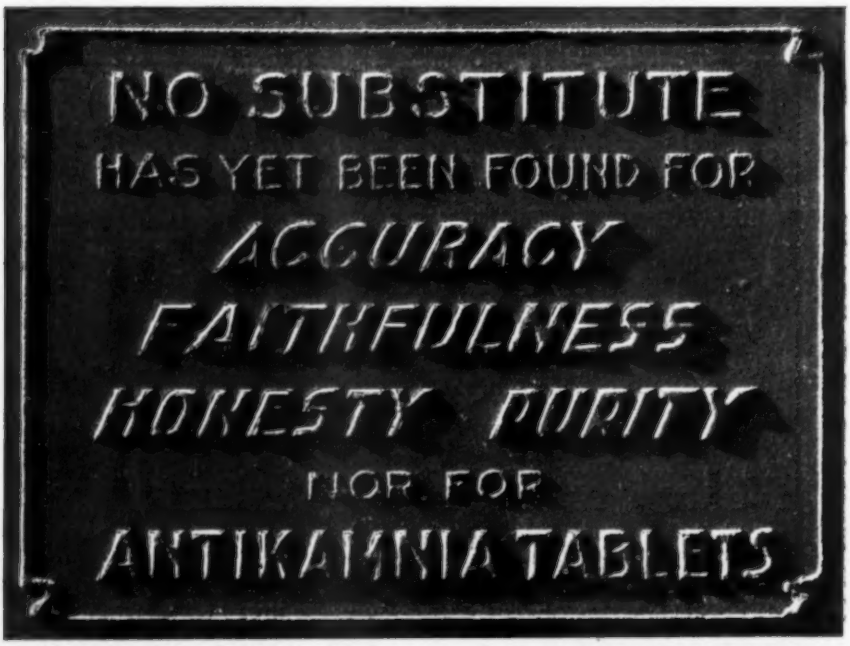
Offers Special Advantages

in Anaemia, Bronchitis, Phthisis, Influenza, Neurasthenia, and during Convalescence after exhausting diseases.

SPECIAL NOTE.—Fellows' Hypophosphites is *Never Sold in Bulk*, and is advertised only to the Medical Profession. Physicians are cautioned against worthless substitutes.

Medical Letters may be addressed to

Literature of value upon application. MR. FELLOWS, 26 Christopher St., New York.



|AK| Antikamnia & Salol Tablets
Antikamnia & Quinine Tablets |AK| Antikamnia & Codeine Tablets
Antikamnia & Heroin Tablets |AK|

The Chicago College of X-Ray- and Electro-Therapeutics

A Post Graduate Department of Ruskin University.

This is a post-graduate college in which physicians can get the greatest possible amount of scientific and practical knowledge in the shortest time. Everything is up-to-date. Instruction is thorough, practical and clinical. The president is widely known as a pioneer in Electro-Therapy and X-Ray treatment. The faculty consists of leading specialists of Chicago, representing several schools of medicine. Graduate physicians who complete the full scientific and clinical courses receive the degree of Doctor of Electro-therapeutics. Special electro-therapeutic courses are given by members of the Faculty on their branches, such as Mental and Nervous diseases, Genito-Urinary, Nose and Throat, etc. Short courses are also given.

FACULTY.

ELMORE S. PETTYJOHN, M. D., Dean. Electro-Therapeutical Practice and Mental and Nervous Diseases.
BYRON ROBINSON, M. D., Gynecology.
W. K. HARRISON, A. B., M. D., Diagnosis.
E. M. READING, A. M., M. D., Diseases of the Heart and Lungs.
H. PRESTON PRATT, M. D., President, X-Ray and Electro-Therapeutics and Medical Jurisprudence.
WILLIAM E. HOLLAND, M. D., Gynecology.
J. C. DELPRAT, M D., Surgery.
GEORGE F. HAWLEY, M. D., Diseases of the Ear, Nose and Throat.
L. D. ROGERS, A. M., M. D., Surgical Pathology and Rectal Surgery.
FREDERICK A. LEUSMAN, M. D., Genito-Urinary Diseases.
J. L. HAMMOND, M. D., Diseases of the Ear, Nose and Throat.
GEORGE McFATRICH, M. D., Ophthalmology.
ARTHUR H. READING, M. D., Obstetrics and Diseases of Children.
T. PROCTOR HALL, A. M., Ph. D., M. D., Secretary. Electro-Physics.
RUFUS H. BARTLETT, M. D., Drug Habits.
HUGO WIGHTMAN, M. D., Electro-Physiology, Histology, Pathology, Bacteriology, and Chemistry.
R. L. SNOW, M. D., Anatomy.
F. F. BROWN, M. D., D. D. S., Dental Surgery.
H. P. FITZPATRICK, M. D., Dermatology.

For further information, and for advice regarding treatment, address

The Chicago College of X-Ray- and Electro-Therapeutics,

MASONIC TEMPLE, CHICAGO, ILL.

Long Distance Phone, Central 1910

Summer Complaint

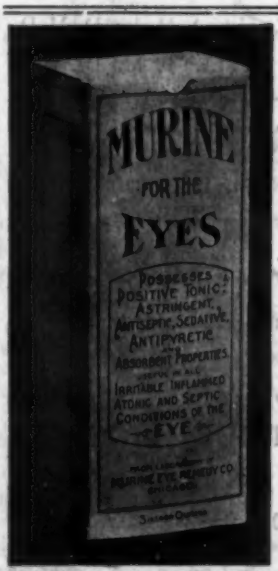
Listerine is extensively employed in the treatment of various forms of DIARRHŒA occurring in children and adults. It is administered in doses of TEN DROPS to a TEASPOONFUL, as an antidote and corrective to the fermentative and putrefactive changes taking place in the contents of the alimentary canal.

In combating serious illness, it is doubly important to be assured that the patient is supplied with genuine **Listerine,** as the substitutes sometimes offered by the trade are generally of undetermined antiseptic strength and too often worthless for the purpose for which they are required.

A PAMPHLET ENTITLED:
"Summer Complaints of Infants and Children,"
MAILED UPON REQUEST.

LAMBERT PHARMACAL CO., Saint Louis, U. S. A.

MURINE


MURINE
FOR THE
EYES
POSSESSES A POSITIVE TONIC, ASTRINGENT, ANTISEPTIC, SEDATIVE, ANTIPYRETIC AND ABSORBENT PROPERTIES
USEFUL IN ALL IRRITABLE INFLAMMED ATONIC AND SEPTIC CONDITIONS OF THE EYE
MURINE EYE REMEDY CO.

A Collyrium Ready for

PHYSICIANS' USE

Possesses **Therapeutical Properties** required by the physician in : : : : : :

EYE CASES

Is Mild and Pleasant in Application to the Most Sensitive Eye : : : : : : :

Standard size, per dozen, - - -	$4.00
1 oz. bottles, each, - - - - -	1.25
1 oz. bottles, per dozen, - - -	7.20
1 lb. bottles, for prescriptions, each, - -	6.00

The large size is contained in white opaque shelf bottles with ground stoppers.

X-Ray Operators use MURINE.

THE PROFESSION SUPPLIED BY

Physicians' Supply Houses

THE AMERICAN X-RAY JOURNAL

PUBLISHED MONTHLY BY THE AMERICAN X-RAY PUBLISHING COMPANY.
55 State St., Masonic Temple 1207, Chicago, Ill.

Editor, T. PROCTOR HALL, A. M., Ph. D., M. D.
Managing Editor, H. PRESTON PRATT, M. D.

SUBSCRIPTION RATES—IN ADVANCE:

United States, Canada and Mexico.....$3.00 | Foreign Countries.....$4.00
Single Copies..... 50 | Single Copies..... 60

Contributions of Original articles and other matter relative to X-Radiance and Electrotherapy, of interest to the medical profession, are solicited from all parts of the world. Contributors will be furnished extra copies of the JOURNAL containing their articles at cost of publication.

Entered as Second-Class Matter, March 4, 1903, at the Postoffice at Chicago, Ill., under the Act of Congress of March 3, 1879.

VOL. XIII. CHICAGO, AUGUST, 1903. No. 2

CONTENTS.

PAGE

Frontispiece. Dr. Carl E. Black.....223
Electro-Therapy, Lesson 3.....224

EDITORIAL.
Dr. Carl E. Black.....228
Meeting of Ill. State Electro-Medical Society.....228
Meeting of American Electro-Medical Society.....228
Personalities.....229

American Electro-Therapeutical Association, Preliminary Program.....229

Book Review, Rockwell's Medical and Surgical Electricity.....232

ELECTRO-PHYSICS.
Platinum Electrodes.....233
Methods of Transforming Alternate Currents into Direct Currents.....234
Reflected Cryptoscopic Cameras.....234
Radioactivity.....234
Electro-Chemical Energy vs. Oxygenation.....235
Secondary Radiations from Gases.....235

ELECTRO-DIAGNOSIS.
X-Ray in Ophthalmology.....235
Becquerel Ray Photographs.....236
Reposition of Fractures under X-Rays.236
Removal of a Piece of Steel from the Globe by an Electro-Magnet.....236
Observations on the Mechanics of Digestion.....236

ELECTRO-THERAPY.
Cerebral Neurous in Relation to Memory and Electricity.....236
Electrolysis in Stenosis of Esophagus..236
Electrolysis for Strictures.....237
Electrolysis in Stricture.....237
Electricity for Habitual Constipation..237
Exophthalmic Goiter.....238
Pathogenic Action of Radium.....238
Rectal Diseases.....238

PAGE

Suggestions in Electro-Therapy. Case of Locomotor Ataxia treated with Lymph.....238

RADIO-THERAPY.
Electro-Chemical Action of X-Rays in Tuberculosis.....239
Protection Against Roentgen Ray Dermatitis.....240
Protectives Against Effects of X-Rays.240
Roentgen Dermatitis.....240
Risks of the X-Ray.....241
Death Due to X-Ray.....241
Technic of X-Ray Therapy as Applied to Diseases of the Skin.....241
X-Light.....242
Uses and Limitations of X-Rays.....242
Rules for the Use of the X-Ray.....243
Curative Effect of X-Rays on Callous Sinuses.....243
Roentgen Treatment of Alopecia Areata.....244
Physics and Therapeutic Value of Kathode and Ultra Violet Rays.....244
Radio-Therapy and Photo-Therapy in Carcinoma, etc., of the Skin.....245
X-Ray as a Therapeutic Agent.....246
Therapeutic Uses of Roentgen Rays..247
X-Rays in Cancer of the Cervix.....247
Uterine Carcinoma, Combined Treatment.....248
X-Ray as Cause of Cancer.....248
X-Ray and Finsen Light in Lupus.....248
Increase in Cancer in Ireland.....248
Primary Cancer of Liver in Girl of 21..249

CORRESPONDENCE.
X-Ray and Electrical Treatments by Non-Professionals.....250
Vascular Nevus.....250
Securing the Discs in Static Machines.250
Hard and Soft Tubes.....250
X-Rays for Locomotor Ataxia.....251
Starting a High Crookes Tube.....251
Radiograph of Lungs.....252
Epithelioma of Lip.....252

Address Communications to Dr. H. Preston Pratt, Managing Editor, Masonic Temple, Chicago.

DR. CARL E. BLACK,

President Illinois State Medical Society.

THE AMERICAN
X-RAY JOURNAL.
Devoted to Practical X-Ray Work and Allied Arts and Sciences.

VOL. XIII. CHICAGO, AUGUST, 1903. No. 2

Electro-Therapy.

A Course of Twenty-four Lessons under the auspices of the Chicago College of X-Ray and Electro-Therapeutics

LESSON 3.—ELECTRIC CURRENTS.

According to the vortex theory an electric current is a rotation of chains of polarized atoms. The amount of current in a given case is represented by the number of rotating chains and the velocity of each. The rotation of 10,000 chains, each turning 100 times per second represents the same amount of current as the rotation of 100 chains each turning 10,000 times per second. It is evident that if the atoms at one part of the chain are held so that they cannot rotate at all, the whole chain is held. In other words, unless the conducting circuit is complete there is no current. It is evident also that the total amount of rotation in one part of the circuit must be the same as the rotation in any other part of that circuit at the same time.

In order to measure the amount of current in any given case we should know the number of rotating chains and the velocity of each; but this is, in the present state of our knowledge, absolutely impossible. It is necessary, therefore, to assume some definite amount of current, which can be measured in some way, as the unit. This unit is called an ampere. It is defined as the amount of current which in one second deposits from a solution of silver nitrate 1.118 milligrams of silver. To the ordinary reader this statement conveys no information at all. The following facts regarding currents with which most people are familiar will assist in giving some definite idea as to the amount of current meant by one ampere. The current required for an ordinary sixteen-candle power incandescent lamp is a little over half an ampere. An ordinary office bell requires about one-third of an ampere. The ordinary 1,200-candle power street lamp requires six amperes. Arc lamps of higher candle power require proportionally larger currents. For example, a 15,000-candle power Finsen lamp requires seventy-five amperes.

For physiological and therapeutical purposes currents of very small intensity are used. A smaller unit, the milliampere, which is one-thousandth part of an ampere, is employed in their measurement. In extracting hairs by the electric needle from one-half to three milliamperes are sufficient. In destroying large tumors by the same method much larger currents, 500 or in some cases 1,000 milliamperes, may be used, but for these the patients must be under complete anesthesia and care must be taken that the current does not pass thru any vital part. Ordinarily one-tenth of an ampere, or 100 milliamperes, is as much current as can be borne without severe pain, and this amount is as much as it is safe to pass thru the chest or any other vital part of the body.

By electro-motive force is meant any

force which tends to produce an electric current. On the vortex theory this force is of the nature of a wrench or twist applied to the chains of atoms. The first application causes the atoms to be arranged in polarized chains, connecting end to end like little magnets, and forming complete circuits. If all the atoms in the circuit are in conductors, that is to say, in such situations that they can rotate, then the chain rotates; in other words, there is a current. If some of the atoms of the chains are in non-conductors, that is to say, are in substances in which rotation is not possible, none of the atoms in the chain rotate, and there is no current, but polarization only.

The unit of electro-motive force is called a volt. It is very nearly the electro-motive force of a single "gravity cell" (copper and zinc plates, copper sulfate solution). An electro-motive force may be positive, tending to produce a right-handed rotation, or negative, tending to produce a left-handed rotation. Two cells in the same circuit may be so placed as to work together, thus doubling the electro-motive force of one, or so as to work in opposition, neutralizing each other and producing no current. Ten cells in a single circuit, placed in similar positions, give ten times the electro-motive force of a single cell. The ordinary Leclanche cell (zinc, carbon, sal-ammoniac solution) has an electro-motive force of 1½ volt. The electro-motive force of the ordinary dry cell is nearly two volts.

Electro-motive force may be thot of as the force which enables the current to break thru resistances. If two clean copper wires which are connected with the poles of a single cell are touched together and then separated, a spark will be seen at the moment of separation. This is evidence that a current was passing. If the wires are old and tarnished, they may be brot together in many cases without a spark appearing; the resistance of the thin layer of oxid on the wire being sufficient to prevent the current when the electro-motive force is only one or two volts. If, by the addition of other cells in the same circuit, the electro-motive force is increased to, say, ten volts, the tarnish on the wires will no longer be sufficient to check the current. If the electro-motive force is increased to 100 volts the spark becomes visible before the wires are actually in contact, and thin layers of dirt and grease are unable to check the current.

The electro-motive force used in the ordinary incandescent light circuits is about 110 volts. The force used on street car lines is usually about 500 volts. On arc light circuits and circuits which are used for transmitting electric power, the voltage is very much higher, 2,000, 10,000 or even 80,000 volts being sometimes employed. Still higher voltages are obtained from static machines. The electro-motive force necessary to produce an electric spark between two conductors in air depends in part upon the nature of conductors and the form of the terminals. Estimates have been made that the electro-motive force required to produce a spark across one inch of air is from 50,000 to 100,000 volts. At this rate the electro-motive force of an ordinary static machine is in the region of one million volts.

The power represented by an electric current, or, which is the same thing, the power required to maintain a given current, is proportional to the current and to the electro-motive force. In this respect the current is like a rotating shaft in a machine shop. In order to increase the power conveyed by the shaft, we may increase the speed of rotation or we may increase the pressure or force upon it. The power exerted is measured by the product of the velocity into the pressure. Sim-

ilarly in an electric current, the power is measured by the product of the current (velocity) into the electro-motive force (voltage). The power of one ampere of current, whose electro-motive force is one volt, is called a watt. There are 746 watts in one horse power. To find the horse power required for one incandescent lamp (16-candle power), we multiply the current (0.6 ampere) by the electro-motive force (110 volts). This gives 66 watts, or about 1/11 of a horse power. A kilowatt is 1,000 watts.

As already stated, an electro-motive force in a circuit may be counterbalanced by an equal and opposite electro-motive force, so that no current results. If either of these opposing electro-motive forces be removed, the remaining one will produce a current. Resistance is the name given to the property of hindering the passage of a current, without reference to its direction. If the resistance in a circuit is very great, the current which is produced by a given electro-motive force is exceedingly small; whereas when the resistance is small the same electro-motive force will produce a very great current. All conductors have some resistance. Copper, silver, brass and aluminum are the best conductors. Lead, zinc, iron and platinum have eight to twelve times as much resistance as the same amount of copper. The resistance of pure water, oils, resins, paraffin, dry wood, rubber, hard glass, quartz and a vacuum is exceedingly great. Ordinary water is a rather poor conductor. When salts are dissolved in water, its conductance is much improved, but even then it is much inferior to that of any of the metals.

The resistance of any conductor is proportional to its cross section.

The unit of resistance, the ohm, is the resistance of a column of mercury 106.3 centimeters long, whose cross section is one square millimeter, at 0° centigrade. This resistance is about the same as that of 250 feet of No. 18 copper wire, the size usually employed in office wiring, for call bells, etc. No. 40 copper wire, the size used in winding the magnet of a telephone, has a resistance of about one ohm for each foot of its length.

The human body conducts about as well as weak solutions of salt in water. Roughly speaking, those tissues which contain most water are the best conductors, while those which contain a less amount of water and the largest amount of fat or earthy matter are the poorest conductors.

The resistance of the body varies very greatly in different directions, and since a large part of the resistance is in the integument, the resistance depends very largely upon the amount of surface to which the electrodes are applied. With large conducting surfaces, completing the circuit across the abdomen, or from the abdomen to the chest or back, the resistance may be made as low as 1,000 to 1,500 ohms. With moderate contact, such as would be obtained by grasping bare wires in the hands, the resistance is in the region of 5,000 ohms; while with smaller contact areas it may be as high as 40,000 or 50,000 ohms or even more.

These three quantities, current, electro-motive force and resistance, are usually represented by the letters I (intensity of current), E (electro-motive force), R (resistance), and are related to one another by Ohm's law, which is

Electromotive force=Resistance×current,

or, $E=R\,I$,

or, Volts=Ohms×Amperes.

This may be stated in the equivalent form,

Current=Electromotive force/Resistance,

or, $I=E/R$.

By means of this law, when any two of these quantities are given, the third may

be found. For example, an electro-motive force of 110 volts produced in an incandescent lamp a current of 0.6 ampere. What is the resistance of the carbon filament in the lamp? Using the equation $E = RI$, we have $E = 110$ and $I = 0.6$, from which we find $110 = 0.6\ R$, whence $R = 183$ ohms nearly.

An electro-motive force of 30 volts applied to the human body produced a current of 20 milliamperes. What was the resistance of the body?

Twenty milliamperes is .02 ampere. From Ohm's law we have $30 = .02\ R$, whence $R = 30/.02 = 1500$ ohms.

A man accidentally received a current from a street car circuit (500 volts). Estimating the resistance of his body to be 5,000 ohms, what current did he receive? We have $I = E/R = 500/5000 = 1/10$ ampere.

It has been already stated that 1/10 ampere, or 100 milliamperes, is as large a current as it is safe for the ordinary individual to receive. If the electro-motive force were 2,000 instead of 500 volts, the man would receive four times as much current, with a probably fatal result. It must be borne in mind, however, that in a circuit which contains a transformer or a large electro-magnet the electro-motive force of the circuit is liable to be momentarily increased at the time the circuit is broken, so that a fatal shock may be obtained from a 500-volt current. On the other hand, cases are known in which a man has made accidental connection with a 5,000 volt current without fatal results.

A current whose rotation is always in the same direction is known as a direct current. Those which periodically change direction are called alternating. These two, the direct and the alternating, are the main divisions of electric currents. Other terms in common use to describe the kinds of currents are almost self explanatory. An intermittent current stops at intervals. A steady current maintains the same intensity. An irregular current changes its intensity or its direction or both irregularly. An interrupted current is the same as an intermittent current. An oscillating current is one in which each impulse is succeeded by rapidly diminishing oscillations or reversals. A high frequency current is one whose alternations are exceedingly rapid. A pulsating current is a direct current having regular pulsations.

Some other terms in common use in works on electro-therapeutics can not be defined with a very great degree of accuracy. A current of high potential has a high electro-motive force, and one of low potential a low electro-motive force. A galvanic current is a current produced from a battery. It is a direct current and usually of low potential. The current produced from a static machine has usually a very high electro-motive force and very small intensity. It is often called a static or franklinic current. The current produced from a faradic coil is called a faradic current. It is alternating, and usually the form of each wave is quite irregular. An alternating current whose wave is not irregular, but which changes its polarity smoothly, is called a sinusoidal or "wave" current.

EDITORIAL

We present as a frontispiece to this JOURNAL a half-tone of Dr. Black, who has been for years the chairman of the legislative committee of the Illinois State Medical Society. We also publish a letter from the doctor in which he takes the stand that x-ray and electro-therapeutical workers should be licensed practitioners. It is pleasing to us to think that the x-ray workers have such a friend, and the suggestion made by him to correct this evil is to have the local societies patronize the licensed practitioner, instead of encouraging this illegal practice by sending patients to the non-professional man to have x-ray pictures taken or electro-therapeutical work done. There is no field for illegitimate practice that opens the bar so wide as this of the x-ray in the hands of the non-professional electro-therapeutical expert. It has been suggested that physicians do not like to send their work to men who are licensed practitioners for fear the practitioner will steal their patients. This is no excuse at all. It is much safer for them to refer to the licensed practitioner rather than to the non-professional gentleman, because in case of malpractice proceedings their interests are protected, and no professional licensed practitioner who does this work would dare do anything but protect the interest of his brother practitioner from whom the case was referred. We sincerely hope that every society will take this up and persuade each one of its members to patronize the licensed practitioner in preference to the other.

Meeting of the Illinois State Electro-Medical Society.

The first annual meeting of this society will be held in the Masonic Temple, Chicago, December 1, 2, 3, 1903, in conjunction with the American Electro-Medical Society. Arrangements are being made so that members may secure round-trip tickets from every part of the state for one fare plus $2. An excellent program is being prepared and a large attendance is expected.

All licensed medical practitioners of every school who are in good standing are entitled to membership in the state Electro-Medical Society. Members of the state society may join the American Electro-Medical Society and receive its official organ, the *American X-Ray Journal*. The Electro-Medical Society differs from all other societies of its kind in the breadth of its aims and in the fact that it is a complete organization, national, state and local.

The advantages of state and local societies are found in the frequency of the meetings and the greater freedom of discussion. Every progressive physician will find it to his own interest as well as for the advantage of his patients to acquaint himself with the theory and practice of electro-therapeutics.

The fee for membership in the state society is $1 and for membership in the national society $3.

Application blanks may be obtained from H. Preston Pratt, M. D., Masonic Temple, Chicago.

American Electro-Medical Society.

The first annual meeting of the American Electro-Medical Society will be held in the Masonic Temple, Chicago, Decem-

ber 1, 2, 3, 1903. Round-trip tickets may be obtained from the center and West and as far east as Buffalo and Pittsburg, for one fare plus $2. The meeting will be of a representative character and a large number of valuable papers will be presented. Members of the society and others desirous of reading papers are requested to submit the title, together with a brief abstract to the chairman of the executive council, Dr. H. Preston Pratt, Masonic Temple, Chicago.

Personalities.

Discussions upon medical and surgical subjects are supposed to be carried on for the good of the public and not for the advancement of any private interests. This, while usually the case, is not always so. Advocates of new methods of treatment nearly always meet with more than the proper amount of opposition. Some physician or surgeon who is skilled in some entirely different line of work, or else entirely unskilled, tries the new method, makes a dismal failure, and forthwith considers it his duty to "squelch" the daring pioneer. Those who are specialists along the new lines see clearly the absurdity of such an attempt. The general practitioners, however, are often unable to distinguish between such tirades and the reasonable objections of careful and conservative men. All new methods, unless backed by the weight of a great name, must pass thru this ordeal before being accepted by practitioners in general. Electro-therapeutic methods have been several times thrown overboard and utterly demolished by such would-be conservators. The electrical methods of treatment are now, however, so well established and so generally recognized that they are attacked by only a small number of ignorant or prejudiced men or by those who have some personal ends to serve. All others either keep silence or add their mite to the world's progress.

American Electro-Therapeutic Association.

PRELIMINARY PROGRAM.

The thirteenth annual convention will be held at the Hotel Windsor, Atlantic City, N. J., on September 22, 23 and 24, 1903. The rate will be $3.50 per day for each person.

Trains leave New York for Atlantic City at short intervals over the Pennsylvania railroad, West Twenty-third Street Station. Price of round-trip ticket, $4.75. This ticket is good for return any time within fifteen days after date of sale.

FIRST DAY, TUESDAY, SEPTEMBER 22, 1903.

Morning Session.

Registration of Members.

9 O'Clock—Executive Session;

10 O'Clock—Scientific Session.

Reading of minutes of previous meeting; Addresses of welcome and responses; Reception of Honorary Fellows and Guests; Communications; Address of President; Report of Committee on Arrangements; Resolutions.

REPORTS OF STANDING COMMITTEES.

On Induction Coils and Alternation, by Margaret Abigail Cleaves, Chairman.

On Electric Light Apparatus for Diagnosis and Therapy, and the Roentgen Ray, by William Scheppegrell, Chairman.

On Electrodes, by R. G. Brown, Chairman.

On Meters, by Robert Reyburn, Chairman.

On Kataphoresis, by Fred Harris Morse, Chairman.

On Static Machines and Condensers, by William Benham Snow, Chairman.

On Constant Current Generators and Controllers, by William James Herdman, Chairman.

On Current Classification and Nomenclature, by William Johnson Jenks, Chairman.

On St. Louis Exposition in 1904, by William Benham Snow, Chairman.

Papers.

"Electrotherapy as a Specialty," Alfred William Bayliss, Buffalo, N. Y.

"Currents of High Frequency, Apparatus, and Therapeutic Uses," Francis Goodwin DuBose, Selma, Ala.

"The Effects of the Secondary Static Currents in Removing Albumin and Casts from the Urine," Boardman Reed, Philadelphia, Pa.

"Some Principles upon which are Based the Use of Electricity in Nervous Diseases," Alfonso David Rockwell, New York, N. Y.

"The Use of Electricity in the Treatment of Diseases of the Heart," Sigismund Cohn, New York, N. Y.

"Electricity in the Treatment of Diseases of the Stomach," Harvey Hamilton Roberts, Lexington, Ky.

AFTERNOON SESSION, FIRST DAY, 2 O'CLOCK.

Exhibition drill of the crew at the Life Saving Station.

3 O'Clock—Scientific Session.

"Electricity in the Treatment of Chronic Deafness," George Zena Goodell, Salem, Mass.

"Employment of Static Electricity in the Treatment of Nervous Diseases," William Benham Snow, New York, N. Y.

"Electrical Treatment of Trachoma and Corneal Opacity, with Illustrative Case," Margaret Abigail Cleaves, New York, N. Y.

"The Successful Treatment of Eighteen Cases of Granular Lids by the X-Ray and High Frequency Vacuum Electrodes," Albert Charles Geyser, New York, N. Y.

"A Year's Work in Electro-Therapy," Laura Viola Gustin-Mackie, Attleboro, Mass.

"The Treatment of Urethral Stricture, and Fissure of the Anus by Electrolysis, with Report of Cases," John Clark Luke, Ocilla, Ga.

SECOND DAY, WEDNESDAY, SEPTEMBER 23, 1903.

9 O'Clock—Executive Session;

10 O'Clock—Scientific Session.

Problems in Electro-Therapeutic Practice; a General Discussion. Members are invited to submit difficulties, arising in practice, on which information or advice is desired, and to offer suggestions as to the solution of such problems.

Papers.

"Treatment of Tuberculosis, with Report of Cases," Russell Herbert Boggs, Pittsburg, Pa.

"The X-Rays in the Treatment of Tuberculosis of the Throat," William Scheppegrell, New Orleans, La.

"The Roentgen Ray in the Treatment and Cure of Cancer, Lupus, Rodent Ulcer, and Eczema, with Histories of Cases Treated," Elijah Wilkinson Smith, Terre Haute, Ind.

"The Use of the X-Ray in the Treatment of Malignant Growths, with Relation of Cases," Marcus Morton Johnson, Hartford, Conn.

Twelve O'Clock—Visit to United States Signal Station.

AFTERNOON SESSION, SECOND DAY, 3 O'CLOCK.

Scientific Session.

"The Position of the Roentgen Ray and Ultra-Violet Light in the Therapeutics

of Malignant Diseases of the Uterus and Adnexa," Margaret Abigail Cleaves, New York, N. Y.

"The Type of Cell and Pathological Features of Carcinoma Which Do Not Respond to X-Ray Therapy," William Leroy Kenney, St. Joseph, Mo.

"The Present Status of X-Ray Therapy in the Management of Cancer," Clarence Edward Skinner, New Haven, Conn.

"The Use of Galvanic Electricity in the Treatment of Cancer and Kindred Diseases," William Winslow Eaton, Danvers, Mass.

9 O'Clock P. M.—Executive Session—Election of Officers.

Reception given by the medical profession of Atlantic county, N. J., and the Academy of Medicine of Atlantic City, N. J., to the members of the Association and guests at the Marine room, Hotel Windsor.

THIRD DAY, THURSDAY, SEPTEMBER 24, 1903, 9:30 O'CLOCK.

Scientific Session.

"Radio-histo-fluorescence," William James Morton, New York, N. Y.

"Kataphoresis," James C. Gill, Chicago, Ill.

"The Roentgen Ray as an Aid in Diagnosis," Herman Grad, New York, N. Y.

"Perineuritis," Almerin Webster Baer, Chicago, Ill.

"Nerve Health and Nerve Debility: the Effect of the Actinic Rays Upon Tissues," Albert E. Sternes, Indianapolis, Ind.

"Retrospect of the Second International Congress on Electro-Therapeutics at Bern," Robert Newman, New York, N. Y.

Members of the medical profession are cordially invited to be present.

The following papers were submitted too late for location in the preliminary program, but will appear in the final program:

"A Plea for Electro-Therapeutics Proper," William James Herdman, Ann Arbor, Mich.

"A Plea for an Accurate and Scientific Method of Roentgen Ray Treatment," Mihran Krikor Kassabian, Philadelphia, Pa.

"Exophthalmic Goitre and Its Rational Treatment, with Exhibition of the Broom Electrode," Francis Besant Bishop, Washington, D. C.

"Some Therapeutic Indications for the Use of the Radiant Light Bath," Thomas Davidson Crothers, Hartford, Conn.

"Some New Points in the Treatment of Tuberculosis," Wolff Freudenthal, New York, N. Y.

"Electro-Therapeutic Gleanings," Jefferson Demetrius Gibson, Birmingham, Ala.

"A Case of Asthma with Fibroids and Pelvic Adhesions, Cured by Galvanism," Charles Augustine Covell, New York, N. Y.

CLARENCE EDWARD SKINNER,
M. D., LL. D., Secretary,
New Haven, Conn.

The *New York Medical Journal* and the *Philadelphia Medical Journal* have consolidated their forces, and henceforth will be issued as one journal. This is as it should be. It is simply a waste of energy to have two national journals covering practically the same ground. We wish the combined journal every success. Why are not the two names combined also?

The Finsen Light Institute of America, of Chicago, has a full equipment for the treatment of various diseases by means of light. Its officers are Wellington G. Stewart, M. D., president; H. John Stewart, M. D., vice-president; Chas. R. Smith, secretary. Among other apparatus is a large improved Finsen lamp of 12,000 candle power, requiring a current of 70 amperes and arranged for treating four patients at one time.

Medical and Surgical Electricity, by A. D. Rockwell, A. M., M. D.

The last edition of this work has been revised by the author with the view of bringing it up to date. The first 178 pages are taken up with electro-physics and electro-physiology, giving an account of such electro-physics and electro-chemistry as is required by the physician, and a full account of experiments in electro-physiology. As a whole this part of the work is clear and accurate, but a few errors have crept in. On page 20 he says: "Electricity is now believed to be identical with the luminiferous ether. That this must be so is a necessary result of the great discovery of Maxwell that light itself is an electric phenomenon." It is true that this idea has been tentatively advanced by one or two scientists, but it is absolutely without evidence. On the same page the author states that "the current thru a telegraph wire 500 miles long meets the greater part of its resistance in the first 100 miles." This is not true; something else was probably meant.

In the explanation of chemical action the old spelling of the words and the old theories are retained. The explanations are consequently less clear than they would otherwise be. On page 26, on the other hand, the author shows himself to be in touch with modern views of electricity when he says, regarding an electric current, "There is here no progress of a material current but simply a motion."

On page 63 an explanation of the difference in "tension" (potential) between the static machine and a galvanic battery is given, based upon the difference of resistance in the two circuits—an explanation which does not explain.

Pages 181 to 525 are taken up with electro-therapeutics, including under this General Suggestions, Electro-diagnosis, Apparatus, Therapeutic Effects, and Applications of the Static, Faradic, and Galvanic currents to various classes of disease. There is lacking in this part that scientific precision to which we have become accustomed in modern methods of therapeutics, but the results of the author's own experience and of his reading are given with great fullness. The effect of electrical treatment upon nutrition is made prominent.

On pages 223-224 occur some paragraphs which might as well have been omitted, commencing, "There are individuals whom electricity always injures, the only difference in the effect on them between a mild and a severe application being that the former injures less than the latter. There are patients upon whom all electro-therapeutic skill and experience are wasted; their temperaments are not en rapport with electricity."

On page 226 the author makes this very true statement: "Some of the best successes we have gained are with patients who have 'tried electricity' and found it wanting. What should we think of a patient afflicted with a broken leg who should say that he had 'tried surgery,' and it failed to set the bone? Would we not ask, What surgeon? Was he a pretender or a man of science? And did he have a fair chance? It is possible, even if good treatment at the hands of good men failed some time ago, that the conditions may now be so altered that the same or different treatment will be successful."

Sixty-two pages are taken up with electro-surgery. Here the author, while he does not profess to be a specialist, has done good work and gives an account of such methods as he has found valuable in his own practice or has good reason to approve.

In a brief discussion of Kataphoresis, pages 588 to 590, the author adheres to the theory of the electrical transference

of fluids in the direction of the current; a common view, but one for which there is no scientific foundation.

The last fifty pages are occupied with a brief account of the Roentgen rays in diagnosis and treatment, the Finsen light, vibratory therapeutics, and high frequency currents.

The book is well printed and illustrated, and, taking it all in all, is probably the best general work on electro-therapeutics published.

Electro-Physics.

Platinum Electrodes.—Platinum is a metal which is being used to an increasing extent as electrode material in industrial electro-chemistry. On the one hand, in the form of an alloy of platinum and iridium, its resistance to attack by acids and alkalies renders it superior to all other metals or elements for this purpose; and, on the other hand, improvements in the mechanical design of electrodes formed of platinum have enabled electro-chemists to obtain a very large area of electrode surface of this metal at a moderate cost as regards capital outlay. The faith in the resistance of platinum to attack by all solvents excepting *aquaregia*, is, in fact, wide-spread, and it is somewhat startling to learn from a recent research carried out by Herr F. Glaser, in the laboratory of the Carlsruhe Technische Hochschule, that, under certain conditions, platinum loses its rank as one of the so-called "noble" metals, and sinks to the level of those base metals which decompose water in presence of alkalies.

Herr Glaser has been investigating the cause of the discrepancy noted when mercury is electro-deposited from a cyanid solution upon a platinum basin. When using a sulphate or nitrate solution, the deposition of mercury occurred in accordance with Faraday's law, and the whole of the mercury could be obtained at the kathode. With a cyanid solution, on the other hand, a deficiency in the weight of mercury obtained was always noted; and after numerous experiments Herr Glaser has proved this to be due to the solution of platinum in the cyanid solution, and to the consequent loss of weight at the kathode. The attack of potassium cyanid on platinum is found to be slow at ordinary temperatures, but it increases rapidly with rise of temperature, and the presence of potassium amalgam greatly accelerates it. The solution of the platinum in potassium cyanid occurs under exclusion of the oxygen of the air, and is allied with an evolution of hydrogen. Further details of this interesting and important research will be found in the *Zeits. f. Elektrochemie* of January 1st, 1903.

The Thallium Accumulator.

Jonas investigates the reactions taking place in a thallium cell, as they are of considerable theoretical interest, in that the battery is composed essentially of a metal and water. One electrode is metallic thallium and the other oxide of thallium, while a solution of thallium hydroxid serves as electrolyte. The author finds that the deposit obtained upon the anode by the electrolysis of thallium hydroxid is not a hydrate, but after drying at 200° corresponds approximately to thallic oxid. Reactions are calculated according to which the discharge of a storage battery consisting of thallium, thallium peroxid and dilute thallium hydrate solution, takes place, and the theoretical value of the capacity of such an element is determined as 235.2 amp.-hours per kgm. of thallic oxid, and 131.4 amp.-hours per kgm. of metallic thallium, differing from former values given by Marsh as 117 amp.-hours per kgm. of the oxid. The author also gives measurements of the potentials with a number of different solutions.—*Zeit. f. Electrochem.*, June 25.

Methods of Transforming Alternate Currents into Direct Currents.

The Electric Review, May 23, 1903, editorially refers to the different methods of transformation:

1. *Motor generators* consist of an alternating current motor, which mechanically drives a direct current dynamo. There is in this case a double transformation of energy, which involves considerable loss.

2. *Rectifiers* consist of a commutator driven by a synchronous motor. This changes the current impulses so that they are supplied to the secondary circuit always in one direction. There is difficulty in preventing sparks at the commutator, and the voltage of the secondary current is necessarily the same as that of the primary.

3. *Synchronous converters.* The alternate current is first transformed to the proper voltage, then supplied to this machine from which, by means of a commutator the direct current may be drawn. This machine is very efficient and is largely used in railroad work.

4. *Leblanc's converter* is a ring transformer, supplied by polphase currents, which set up a revolving magnetic field. Its action is similar to the last.

5. *Stationary transformers.* The electrolytic rectifier depends upon the property of certain metals of allowing a current to flow to them from a solution, but opposing a flow in the opposite direction. Thus, a cell constructed of a plate of aluminum, a solution of ammonium phosphate, and a plate of iron will allow a current to flow from the aluminum to the iron with but a slight loss, but will allow no appreciable current to flow in the opposite direction, unless the potential across the cell is forty volts or more. This apparatus may be used as an electric valve. Attempting to pass an alternating current thru it will cut out every other half wave, and transmit a series of impulses, all having the same direction. By a proper combination of four or more cells, the second half wave may also be sent thru the same circuit, and we then get a continuous current similar to that supplied by a mechanical rectifier. The apparatus is simple, cheap, noiseless, but is rather inefficient.

6. *Cooper-Hewitt vapor converter* is similar to the electrolytic rectifier, using mercury and mercuric vapor. Its efficiency is good. The apparatus is simple and inexpensive and requires no attention whatever after being started.

7. *Rectifying Arc.* If one electrode of an alternating current arc is split into two parts, insulated from each other, and the pole of a magnet be brought up to the arc, the reaction between the magnet and current will be such as to cause the positive half waves to flow through one side of the compound electrode, while the negative half waves will take the other course. This method, while interesting, is inefficient.

Reflected Cryptoscopic Cameras.

William Rollins, *Electrical Review*, May 23, 1903, describes and illustrates an instrument for viewing in a mirror the fluoroscopic shadow of the x-ray tube, enabling the operator to observe comfortably the shadowgraph of any part of the patient's body.

Radioactivity. —Elster and Geitel, in *Phy. Zeit.*, September 15, 1902, give an account of researches in which they investigated the fact that any conductor becomes radioactive when charged and exposed to air, especially when the air is contained in a closed subterranean space. To shed some light on the origin of this radioactivity, they have made experiments with air enclosed for three weeks in a

boiler, and on air sucked up out of the ground. If the activity is due to a process within the air itself, it will be evolved in the boiler, and if it is due to contact with the earth, it will be shown in the air sucked up. The results were altogether in favor of the view that the activity of the air in a cave or cellar is due to contact with the earth and to exhalation of ground air. They now claim to have traced two distinct sources of radioactivity, one of them being the action of the sun upon the higher strata of the atmosphere, and the other being the exhalation from the soil of air which has been in intimate contact with it, and which diffuses up through capilliary passages in the ground.—*Electrical World and Engineer.*

Electro-Chemical Energy vs. Oxygenation.

At the Indianapolis meeting of the National Eclectic Association Dr. A. J. Atkins, California, read a paper in which he claimed to have demonstrated that human blood is purified by electro-chemical action taking place in the lungs, outside of the blood stream, and that oxygen does not pass from the air into the blood by osmosis.

Secondary Radiation from Gases Subject to X-Rays.—Barkla (*Phil. Mag.*, June, 1903) describes in detail the apparatus used and the experiments conducted for the investigations of the above subject. He arrives at the following conclusions: 1. All gases subject to x-rays are a source of secondary radiation. 2. The absorbability of the secondary radiation is (within the limits of possible error, which was about 10 per cent.) the same as that of the primary radiation producing it. 3. For a given primary radiation the intensity of secondary radiation is proportional to the density of the gas from which it proceeds—the temperature and the pressure being practically constant. 4. The secondary radiation is not due to the recombination of the ions. As the primary and secondary radiations differ appreciably in intensity only, the author thinks that we may reasonably conclude that the radiation proceeding from gases subject to x-rays, is due to scattering of the primary radiation. As this scattering is proportional to the mass of the atom, it may be concluded that the number of scattering particles is proportional to the atomic weight. This would then give further support to the theory that the atoms of different substances are different systems of similar corpuscles, the number of which in an atom is proportional to its atomic weight.—*Electrical World and Engineer.*

Electro-Diagnosis.

X-Ray in Ophthalmology.

Dr. M. S. Mayou (*Lancet,* Feb. 28, 1903) examined sixteen cases of supposed foreign body in the eye. Thirteen were found and localized accurately, one was missed and two contained no foreign body. He also commends the use of the x-ray in trachoma. He has found no evil results to follow exposure of the eyeball to the x-rays. Recent pannus often yields readily under the x-rays; improvement sometimes begins at once.

Becquerel Ray Photographs.— Elster gives description of the simplest method of obtaining Becquerel radiographs. The radioactive substance is obtained by exposing negatively charged copper wires to the air, and rubbing off the surface layer after exposure. If cotton batting is used for rubbing it off, it should be moistened with a little hydrochloric acid; this is afterward neutralized with ammonia and eliminated by igniting the cotton; the activity of the ashes is the same as that of the cotton. The radioactivity lasts for about five hours; as its loss is greatest at first, the exposures must be made as soon as possible. To save time, it is advisable to substitute a piece of leather, moistened with ammonia, for the cotton, since it can be quickly dried in a spirit flame. The exposure is then made for about four hours, and the leather is again made radioactive. After about five such repetitions, good radiographs of lead stencils are obtained.—*Electrical World and Engineer.*

Reposition of Fractured Fragments Under X-Rays.

Dr. Carl Beck, New York *Interstate Medical Journal,* December, 1902, recommends highly the reduction of fractures and displaced bony fragments while viewed by means of the x-ray. Only in this way is it possible in many cases to make the reduction with accuracy and certainty.

Removal of a Piece of Steel from the Globe by an Electro-Magnet.

Dr. W. B. Johnson, Paterson, N. J., reported in the *Jour. A. M. A.,* the removal of a large chip of iron, which had passed thru the iris and lens into the vitreous chamber of the eye, by means of an electro-magnet.

Observations on the Mechanics of Digesting.

A study of the motions of the contents of the stomach and intestines was made by Dr. W. B. Cannon, Boston *(Jour. A. M. A.,* March 21, 1903). Pellets of bismuth subnitrate and starch, taken with food, were examined in situ by means of x-rays. The antiperistaltic waves of the colon were distinctly demonstrated and were always produced by the injected mass.

Electro-Therapy.

The Cerebral Neurons in Relation to Memory and Electricity.

Sir James Grant, Ottawa, Canada, (*Jour. A. M. A.,* February 2, 1901) discussed the relation of electrical currents to nerve action, calling attention to the fact that nerve cells are capable of so much ameboid movement as to actually alter their relation to each other, and pointing out that the application of electricity might accelerate or retard these movements and thus be a powerful therapeutic agent in nervous disorders.

Electrolysis in Stenosis of the Esophagus.

Dr. J. B. Feldovitch, in *American Medcine,* April 4, 1903, says electrolysis may be safely relied upon to produce rapid and comparatively painless dilatation. In three or four short treatments he stretched a stricture from three and one-third millimeters to thirteen millimeters. From a palliative standpoint, no method can compete with this. With weak currents and short treatments there is no danger of injury to adjacent organs.

Electrolysis for Stricture.

Dr. A. A. O'Neill, of Chicago, in the *X-Ray Era* for July, 1903, condemns the treatment of urethral and other strictures by electrolysis. He claims that it is impossible to destroy a stricture by electricity, that if the stricture were destroyed it would certainly return, and that the use of the electric current for strictures does harm only. In support of this contention seven experiments are mentioned. In these experiments scar tissue and mucous membrane were injured by the use of a few milliamperes for three to five minutes. In two cases it is stated that the postitive electrode was used. Presumably the same was true in the other cases, tho it was not so stated. The object of these experiments appears to have been to show that the positive electrode will cause an injury to scar tissue and mucous membrane. The electrode was of aluminum, a metal which is soluble in both acid and alkaline products of decomposition. The astringent effect of the positive electrode is well known, and we really can not see that anything has been gained by these experiments. Dr. O'Neill then describes nearly a dozen cases which have come under his observation in which electricity was used with either no result at all or injurious results. From these cases he infers that electricity is not applicable to the reduction of strictures. In none of the cases cited are sufficient details given to enable any one familiar with electricity to judge whether the treatment has been correctly applied or not. Dr. O'Neill expresses in very emphatic language his disapproval of such treatment. He is undoubtedly right. The cases he cites, which he says are similar to those he has himself tried, show clearly the dangers of electrical treatment in the hands of those who know little or nothing about it. Dr. O'Neill has done well to emphasize this point. But when he goes on to infer from the failure of such treatment that no cases of stricture can be cured by electrolysis, his conclusions are certainly not justified by the facts. It would be just as reasonable to condemn the use of surgery in general because in the hands of unskilled and ignorant persons the knife has done incalculable harm.

Dr. William F. Butterman confessed that his own results were equally bad, and commended the conclusions of Dr. O'Neill.

Electrolysis in Stricture.

Dr. C. S. Neiswanger, Chicago (*The Critic*, September, 1902), says: "Organic strictures located in any part of the body can be successfully absorbed by electrolysis. There is a certain technic laid down for the treatment of these cases by my friend, Dr. Robert Newman, of New York, and I find that just as long as I follow that technic just so long do I have results similar to those recorded by Newman. Just as soon as I deviate from it I do not have the same good results."

Electricity in the Treatment of Habitual Constipation.

Dr. Sigmund Cohn, New York, in the *New York Medical Journal*, September 6, 1902, describes his method of treatment. He starts with the static induced current (sinusoidal) which he administers as a "swelling current," namely, starting from zero, gradually increasing to a maximum and then gradually returning to zero. In this way alternating contraction and relaxation of the involuntary muscles of the intestines are produced. He also uses the galvanic current, using normal salt solution in the rectum in contact with the rectal electrode. The faradic current may also be employed. Of sixteen cases reported, all but three were permanently cured.

Exophthalmic Goitre.

Dr. H. M. Beaver, of Springfield, Kan., regards exophthalmic goitre as a vasomotor paralysis and recommends the galvanic current to overcome the paralysis.

The Pathogenic Action of the Emanations from Radium.—In a report to the Academy of Sciences (*Le Progrès Médicale*, February 28, 1903), M. J. Danysz says the application to the skin of a tube containing a salt of radium produces an ulcer in from eight to twenty days. One containing chloride of barium and radium is five hundred thousand times more active than metallic uranium. Congestion of the human skin follows an application of a few moments. Applied to the skin of a rabbit it destroys the epidermis. Placed under the skin the tube has only a feeble reaction on the epidermis, seeming to penetrate with difficulty the muscles. The intestines and the serous surfaces are but little affected. Introduced into the cavity of the abdomen of guinea pigs and allowed to remain for several months, it produced no lesions comparable to those of the skin.

Its action upon the nervous centers was noticed in all animals, but comparatively feeble in those whose osseous tissues protected the nervous organs. The application to the vertebral column and cranium of tubes caused paresis, ataxia, and convulsions, followed later by death. The salts of radium dissolved in distilled water emit certain emanations which prevent the development of anthrax bacilli.

Rectal Diseases.

Dr. W. H. Walling in the *Medical Times and Register*, July, 1902, advises the treatment of piles by the anode needle, with 5 to 10 ma., for 10 minutes or until blanching takes place, then dress with a soothing ointment.

For hemorrhoids he uses light touches with a small galvano cautery at a low red heat.

Torticollis he corrects by using the faradic current upon the flabby muscles and the kathode with 10 ma. to the contracted muscles. The static spark may be used to the weak side for 5 or 10 minutes. There is danger of using too much current in such cases.

Syphilitic ulcers of the rectum are treated with the zinc anode for escharotic and electrolytic effect.

A fistula he treats with a small copper kathode, insulated to within one-half inch from the end, inserted to the bottom of the tract, and treats successive portions at different times until healing extends to the outside. Ten to 20 ma. for 5 to 10 minutes is sufficient for one sitting. Or he closes the whole tract by adhesive inflammation following treatment with a copper wire anode. The polarity must be changed for a few seconds before attempting to withdraw the wire.

Annal fissures are treated by touching the whole surface with a silver probe kathode, using not more than 10 ma., repeating the operation if necessary after one or two weeks. In some cases a single treatment is sufficient.

For cancer of the rectum he recommends Massey's method of electrolysis with an amalgamated zinc electrode and heavy currents under anesthesia.

The various kinds of ulcerations are then discussed and the electric treatment suitable to each described.

Suggestions in Electro-Therapy with Report of Case of Locomotor Ataxia Treated with R-H Lymph.—A. R. Rainear, M. D., Philadelphia, Pa., in *Journal Animal Therapy Association*, gives some suggestions relating to the proper electrical applications in locomotor ataxia:

"Where the pains are general and occur frequently, nothing is more beneficial than a stabile descending galvanic current applied to the spine twice or three times a week, using fifteen or twenty ma., the seance lasting about twelve minutes. Then follow this with a large faradic brush (primary current) over the entire back, as strong as bearable, for three or four minutes.

Should this means of electrization fail to relieve the pains, you can resort to static electricity. In fact, where galvanism has been tried and failed to relieve the painful conditions, I always depend on static electricity.

If the muscles show the reaction of degeneration, the use of the static current will cause muscular contractions and assist the restoration of muscular power.

Static electricity has certain advantages in some cases where galvanism or faradism have given negative results, or have apparently lost their remedial power, after their use has been too long continued.

Where there is a marked impairment of sensation, static sparks over the anesthetic area is the remedy pre-eminent, surpassing in value galvanism or faradism.

A thorough examination and correct diagnosis of the location and extent of lesion is necessary in all cases of locomotor ataxia. In very advanced stages the prognosis must be guarded as to complete cure, and early response must not be expected in a majority of such cases.

In tabes, by far the most effective remedy known is the R.-H. Lymph-Compound. The adjuvants, hygiene, exercise, diet, and electro-therapy, are very important and must be carefully employed.

Do not inject the lymph daily, as a matter of routine, and feel that your duties are completed, but watch and study your case closely and keep concise records of your frequent examinations. To aid the cell action of the lymph, one should properly exercise the muscles and nerves, which exercise should be mechanical, mental and electrical."

Radio-Therapy.

The Electro-Chemical Action of the X-Rays in Tuberculosis.

Dr. J. Rudis-Jicinsky, Cedar Rapids, Iowa, gives (*N. Y. Med. Jour.*, March 2, 1901) the results of his experiments upon various types of bacilli in cultures. He finds that certain x-rays were similar in properties to the rays of light at the violet end of the spectrum, and that the various bacteria react differently according to the quality of the plasma and the amount of liquid they contained. In a mildly alkaline culture medium, the growth of bacillus tuberculosis is accelerated by an x-ray tube, but in acid media this bacillus is rendered inert by x-rays. The following table gives a summary of his results:

UNDER X-RAY RADIATION.

	Media.	
	Acid.	Alkaline.
Bacillus anthracis.....	Negative.	Negative.
Bacillus tuberculosis, in sputum, destroyed in..	48 minutes.	Negative.
Bacillus tuberculosis, in flask, destroyed in.....	50 minutes.	Gth. accelerated.
Spirillum choleræ, in flask, destroyed in.....	51 minutes.	55 minutes.
Bacillus diphtheriæ, in flask, destroyed in.....	46 minutes.	48 minutes.
Bacillus typhi abdominalis.....	45 minutes.	49 minutes.
Streptococcus.....	Negative.	Negative.
Staphylococcus.....	Negative.	Negative.
Micrococcus pyogenes albus.....	Negative.	40 minutes.
Micrococcus gonorrhœa.	35 minutes.	49 minutes.

Ten guinea pigs and ten rabbits were inoculated with the foregoing cultures. Beginning with the tenth day they were all exposed to the x-rays daily. Six guinea

pigs and two rabbits whose secretions were rendered alkaline died of tuberculosis. The others inoculated from the box with acid media were living and seemingly in good condition after two years. In some of these post mortem examination showed that they had been actually cured of tuberculosis. Chalky masses were found enclosed in dense connective tissue, but without giant cells and without the bacillus tuberculosis.

Out of twenty selected patients beginning with pulmonary tuberculosis who were treated by the x-rays, in addition to pure air, suitable temperature and hygienic surroundings, sixteen are doing comparatively well. He treats the patients from the back and front of the chest, alternately, the tube being fifteen to eighteen inches from the body. The time of exposure must be carefully watched. If not long enough the desired result is not obtained, if too long it may set up inflammatory action which may cause hemorrhage from the irritated lung tissue and weakened vessels, and accelerate the growth of the bacilli instead of destroying them. He finds it well to give static electricity alternately with the x-ray.

Protection Against Roentgen Ray Dermatitis.

Dr. Carl Beck in the *Medical Record*, Jan. 31, 1903, considers the idiosyncrasy of the patient an important factor in x-ray burns. Burns are worse during sultry weather. He advises a first exposure of five minutes with a soft tube and a moderate light, followed after one week by a second, and after another week by a third ten-minute exposure with the tube five inches distant. If no injurious reaction occurs after the third exposure x-ray treatment may be safely applied. When erythema appears on the outer edges of the exposed portion of the body treatment should be stopped for a few days until the erythema shows signs of abatement. In malignant growths with extensive ulceration he advises continuance of irradiation until the ulcerative area is fully exposed and the necrosed tissue is curetted. Dermatitis, while undesirable, is as yet inevitable in the successful treatment of malignant growths. He advises irradiation shortly after the removal of malignant tumors.

Protectives Against Effects of X-Rays.

Dr. W. A. Pusey, Chicago, in *Interstate Medical Journal*, December, 1902, recommends sheet lead, 1-50th to 1-32nd of an inch in thickness, for masks. These he covers on both sides with ordinary wrapping paper. Masks may be made of a paste of a bismuth or a lead salt; but vaselin, paraffin, hard rubber, etc., he considers worthless as a protection, and adds very truly, "Nothing will prevent x-ray effects upon the tissues except substances which are opaque to the rays."

Roentgen Dermatitis.—Wiesner has witnessed a case of laboratory x-ray dermatitis which ran the usual protracted, rebellious course. The patient is a healthy young man engaged in the manufacture of Roentgen tubes for years. He has been constantly exposing himself to the x-rays, but never experienced any ill effects and considered himself immune to their action. There was a round, intact patch in the center of the extensive and intense Roentgen ulceration. This with other features of the case can be explained only by a trophoneurotic origin. The x-rays penetrate into the skin and cause some chemical alteration in the molecules surrounding or in the nerve terminals. This irritates the nerve and by reflex action induces the trophoneurotic disturbance. The alterations in the skin are secondary. This hypothesis explains the protracted incubation in many cases and the universally recognized intractability of the lesion.—*Jour. A. M. A.*

Risks of the X-Ray—So many and such encouraging reports continue to fill our journals of gratifying results from the Roentgen rays in cancer, that perhaps a word of caution is really in season. First, that none of these "cures" have as yet been under observation long enough to assure us as to their permanency. Second, that it is quite possible by too enthusiastic and too frequent use of the ray to produce such a rapid and excessive breaking down of the new growth as to overwhelm the lymphatics and produce symptoms resembling ptomaine poisoning. Lastly, the most careful of the few microscopic studies of the treated growths, which have yet been made, that of Prof. S. G. Shattuck, pathologist to the Museum of the Royal College of Surgeons, London, an authority of international repute, has been most disappointing, in that it failed to reveal any traces of fatty or other degeneration of the epithelium of the cancer columns, or of the stroma of the tumor. Nor was there any cell-lysis, leucocytic invasion of the epithelium or any evidence of cessation of growth at the margins of the tumor. On the other hand, the case studied by Dr. Ellis, of Philadelphia, where the ingenious device was adopted of covering one-half of a mammary cancer with a lead shield and exposing it to the x-rays for two weeks before its removal, showed marked degenerative changes in the half exposed to the rays.—*Medical Sentinel.*

Death Due to X-Ray.

Dr. Maurice Rubel, Baltimore (*Jour. A. M. A.*, Nov. 22, 1902), reported a patient suffering from abscesses of Skene's ducts, and urethritis, with severe pains in the side and back, nausea and chills. In order to skiagraph the kidneys two exposures each lasting 20 minutes were made, the tube being six inches from the abdominal wall. Four days later papules appeared on the skin of the abdomen followed by a dry purplish-red dermatitis. Soon large blisters appeared which broke and discharged a thick yellowish material of irritating character. Ulcers formed which refused to heal. The bowels became inactive and vomiting became frequent. After several such attacks the ulcer was excised under an anesthetic. The patient improved for some days, then became weaker and died. There was no autopsy. Whether the death was due chiefly to the x-ray or to some unrecognized abdominal lesion is a matter of doubt.

The Technic of X-Ray Therapy as Applied to Diseases of the Skin.

Dr. L. E. Schmidt, Chicago, in *Jour. A. M. A.*, January 3, 1903, criticises the measurement of x-ray energy made by Freund and Schiff, Pusey and others, pointing out that data regarding the primary current in the coil gives no information about the quality or the quantity of x-rays generated. He advises measuring the x-ray output of the tube by the equivalent spark gap in parallel with the tube, together with a statement of the apparent degree of vacuum. Dr. Schmidt appears not to be aware of the fact that the equivalent spark gap may be varied from say two inches to five inches by changes in the character of the exciting currents. After discussing the vacuum of the tube and its regulation, he says that it is a waste of energy in a given tube to use a current which makes the anode red hot. He advises against the use of a "too soft" tube, because it may not produce sufficient x-rays for the treatment of skin lesions. "Suitable x-rays can only be produced in tubes of medium vacuum." The greatest intensity of x-rays is almost invariably produced in tubes of low vacuum, and skin lesions can be successfully treated with such tubes. If the lesion extends deeper, tubes of

higher vacuum must be used in order to reach the affected parts. Dr. Schmidt says it is the general opinion that the x-rays are most abundant where the angle of refraction equals the angle of incidence—a mistaken idea, as any one can see by looking at the reflected kathode stream in a low tube, or by testing the rays photographically.

X-Light.—Rollins, in the *Boston Med. and Surg. Jour.*, reports that he has by observation and correspondence with investigators learned of a number of cases where the eyes had been impaired by working in x-light. He has recently had occasion to examine a man who had been exposed to a considerable extent since 1896, and tho he is less than 40 years of age he can not read the daily papers. To enable him to see his work comfortably at a distance of 43 cm., it was necessary to provide him with double convex glasses, number 26. The necessity of having a non-radiable box enclosing the tube with only the smallest aperture sufficient to supply the rays where they are required is insisted on, and the hands holding the cryptoscope should be protected by a non-radiable covering. During the pumping and tuning of the x-ray tubes they should be kept in an oven with non-radiable walls. He has also noticed that while cancer is not considered contagious, yet several persons who have been treating the disease by the x-rays have been affected. He thinks this might have been avoided if proper precautions had been taken. He says it is, to say the least, unwise to be constantly treating cancer and other diseases by the x-light without regularly fumigating the room and keeping the cryptoscope and other appliances sterile. He advises fumigating the x-ray room with formalin vapor every night, and to have the instruments used of such material that they can be sterilized by heat.

Uses and Limitations of the X-Rays in the Treatment of Diseases.

In the Canada *Lancet* for June, 1903, Dr. John McMaster, Toronto, says that too much stress has been laid upon flouroscopic examinations for the discovery of fractures and dislocations. It is not accurate enough to be relied upon. The radiograph is reliable. X-rays have a marvelous effect upon tubercular troubles affecting the surface of the body. All of his cases of lupus except one have been completely cured. The resulting scars have been almost invisible. Large numbers of fistulæ have been cured. X-rays curtail development of a tuberculous lesion and aid in recuperation. In tubercular joints when the synovial membranes are affected the old form of treatment with emulsions of iodoform and formalin is better than x-rays. In other cases x-rays are most beneficial. He found x-rays satisfactory with rodent cancer, but much less so with epithelioma and carcinoma. A surface epithelioma of recent occurrence will respond readily to the radiance, but those that have been treated with plasters seem to have acquired resistance to the rays. Deep-seated carcinomas are helped in nearly all cases. The patient's general condition improves and he increases in weight for a time, but afterward loses ground again. Toxemia seems to develop after the use of the rays in many cases, which may lead to a fatal termination unless elimination is kept active. In malignant cases he advises to ray actively for three to five weeks, then operate, and renew raying as soon as possible afterward, continuing one to several months. His results with cases treated in this way have been up to the present all that could be desired.

Rules for the Use of the X-Ray.

Barnum, of Los Angeles, gives the following for the guidance in technic in the therapeutic use of the x-ray:

1. Seldom, if ever, is a dermatitis necessary. The effect of the ray is a tissue change which occurs without reference to inflammation of the overlying skin.

2. After an x-ray tan appears there is little or no danger of a dermatitis, even from excessive exposures. An x-ray tan should be secured in cases where deep tissue effects are desired.

3. The less the number of exposures to secure the reaction (*rayism*) without danger to the other parts, the better. By *rayism* I mean the profound effect of repeated rayings—not necessarily an acute inflammation.

4. Idiosyncrasy to the ray is very great. Conservatism is essential until the personal peculiarity is well known.

5. In primary lesions it is best to secure *rayism* as speedily as possible, consistent with safety to the surrounding parts.

6. Secondary or recurring lesions of malignant nature are much more stubborn to treatment than primary, and should be rayed much more forcefully.

7. Varying obliquity in direction of the ray as focused on the lesion is desirable, and should be especially used where the ray would enter the cranial cavity.

8. The cumulative effect of the ray is very marked, and may be noticed several months after treatment has ceased. This is especially so in cases where the treatment was with high tubes for *rayism* on deep tissues.

9. In strictly superficial epitheliomata a comparatively low tube is best—one by which good definition of bones of hand is had at two feet distance.

10. Use a varying high tube for all indurated spots of any size. Penetrability of the ray must increase in geometrical progression with the thickness of the diseased tissue.

11. Distance of tube from object should vary—perhaps between seven inches and twenty inches.

12. To cause hyperemia and induce granulation, use a medium high tube at considerable distance, excited either by a static machine or coil.

13. After a severe reaction from the ray resulting in broken down tissue, give the spot a long rest before attempting to use the ray for healing purposes.

14. Conservatism is desirable in every case only to the point of knowing particular features to be avoided. Be sure you know your tube and patient, and then *hit hard*. Break down all the affected tissue during the very first series of treatments.

15. In treating typical epitheliomas break down the induration completely so that all involved tissue may be discharged through the ulcer. Avoid too rapid absorption of breaking down diseased tissue. Get an open ulcer over a malignant growth, if at all possible—using plaster or knife if necessary.—*Canada Lancet.*

The Curative Effect of the X-Rays on Callous Sinuses of the Abdominal Wall

D. Berry Hart reports two cases of callous abdominal sinus which healed with marvelous rapidity after a few exposures to an incision in the right iliac fossa to evacuate bloody fluid of unknown origin. This sinus was five to six inches long, and ran from near the iliac spine downward and inward to the uterus. It had existed for several months. In order to see its course, an x-ray photograph was taken. This was followed by an almost magical cicatrization of the sinus after plugging with iodoform gauze for several weeks had failed. The second case was that of a sinus, which had persisted for some months in a case of operations for extra-peritoneal gestation where fetal bones had

been retained for five years. A narrow sinus into the shrunk sac remained. It would finally admit the index finger. Cure was effected after three exposures to the x-rays. The sinus has reopened a little, but there may be some bone present.—*June 21, 1902.*

Roentgen Treatment of Alopecia Areata.—G. Holzknecht, in *Wiener Klinische Rundschau,* October 13, says a patch of alopecia reacts to the Roentgen treatment with a persistent redness after four weeks, but the remaining hairs do not drop out, while the sound scalp reacts with the dropping out of the hairs after eight to fourteen days, but no redness. New hairs begin to grow on the alopetic patch in the successful cases in six weeks, while three months are required for the new growth of hair on the sound scalp. Certain cases prove refractory, but it seems to be impossible to determine beforehand this category of patients, altho Holzknecht has been making a special study of this subject for some time. He describes and illustrates one case showing a fine growth of hair six months after Roentgen treatment was instituted. The patient was a clerk of 18. He had eight bald patches on the back of his head, the disease progressively increasing for five months when treatment was commenced. In Kienboeck's successful case published last year, the patient was 26 and the alopecia had lasted for three years and had long been stationary. Holzknecht remarks that it is absurd to attribute the curative result to the bactericidal properties of the rays. A bactericidal effect is obtained only when the rays are far too powerful to be applied to the human skin. In one case he has observed, the trichophyton tonsurans cultivated readily from a Roentgen dermatitis induced on a boy with herpes tonsurans, showing that even an unusually vigorous application of the rays had no influence to check the growth of the micro-organism.—*Jour A. M. A.*

The Physics and Therapeutic Value of Kathode and Ultra-Violet Rays.

Dr. Roswell Park, in *Medical News,* May 30, 1903, gives a theoretical discussion of this subject, together with theories of light and electricity, with special reference to the treatment of cancer. He says, "It is not intended to present here directions for their use, nor to report cases, though to give it a certain 'practical' character a few conclusions are appended. It is too early yet to report cases." The electron theory is briefly outlined. The author here gets a little confused, failing to distinguish between the kathode rays, which consist of a stream of material particles, and x-rays, which are electro-magnetic waves (ether waves). "So far as photo-therapy is concerned, it must necessarily find its widest range of application when the disease is confined to a small area and is superficial."

"We thus have two therapeutic agencies (x-rays and light) affording us methods of treatment which are so new and to such an extent still on trial that we must hesitate lest enthusiasm run away with judgment in discussing their merits and their applicability.

Nevertheless, the results of extensive experience may at least be formulated in the following safe and warranted conclusions:

1. They afford methods of treatment for extremely new growths of limited area and superficial character, which, while not exactly certain, are extremely promising.

2. They not only cause no pain, but tend to relieve pain, both superficial and deep, in a most pleasing and satisfactory way.

3. They are adapted to cases which

can hardly be submitted to any other method of treatment, and they afford more hope in delayed or inoperable cases than does any other method of treatment.

4. It will be found that the odor of putrefaction may often be suppressed by their use and the putrefactic process itself checked.

5. Burns and intense dermatitis, so frequently noted when the treatment first came into vogue, may now be almost certainly avoided.

6. More than this, they afford a supplementary method of treatment after operation, by which the benefits of the same may be enhanced and enlarged.

7. It is not necessary to intermit such work as the patient may be engaged in, in order to carry out the x-ray or photo-therapeutic method of treatment.

Of course, it is not fair to expect too much of such agents, especially of those so new. One of the most comforting aspects of their use is the relief from pain which they afford even when this pain is deep seated and of uncertain origin. Even such use of the x-rays as is called for in an ordinary fluoroscopic examination has been known to relieve pain, altho by it nothing else was accomplished."

Radio-Therapy and Photo-Therapy in Carcinoma, Tuberculosis and other Diseases of the Skin.

Drs. Hyde, Montgomery and Ormsby, of Chicago, published in the *Jour. A. M. A.*, Jan. 3, 1903, an important contribution upon this subject. In their treatment of skin lesions the distance from the anti-kathode varies from 5 to 15 inches, the duration of each treatment from 3 to 10 minutes, the interruptions of the energizing current from 800 to 1,200 per minute. For superficial lesions a medium soft tube is used and for deeper lesions a moderately hard tube. Lead plates are used to protect the other parts. They find the susceptibility of individuals to vary considerably, and conclude that in the absence of exact methods of measuring the intensity and penetration of x-rays the only safe guide to treatment at present is the reaction obtained in each case. Comparing the Finsen light with the x-rays they say that with the Finsen light "reaction occurs promptly; it is always superficial; it leaves a pigmentation, which protects to a degree against the light in successive exposures; and the final results of treatment are apparent usually within a short period of time. With the x-rays the reaction is much slower in appearing, from one to two, or even three weeks; it frequently involves deeper tissue; the normal integument once the seat of distinct reaction is usually much more sensitive to subsequent exposure; and, finally, the effects of the radiation are frequently prolonged thru several months after the last exposure.

"Of fifty-five cases of carcinoma of the skin treated by us with radiotherapy, the majority were of the superficial type, known generally as epithelioma or rodent ulcer. The value of the x-rays in the removal of such growths is so generally recognized that we shall give here a summary merely of our observations, together with brief outlines of a few typical and otherwise interesting cases. In the most superficial forms of carcinoma our results have been quite uniformly successful. As a rule, after giving the lesion a few short exposures and waiting for a period of ten days or two weeks to allow for any unusual susceptibility on the part of the patient to manifest itself, from twelve to twenty-one treatments with a moderately soft tube were given on every alternate day or daily until there appeared a slight erythema, on the recognition of which treatment was suspended at least temporarily. In discharging ulcers the secretion became markedly less or disap-

peared in from four to eight days after beginning treatment, while pain or other anomalous sensations usually subsided earlier. All evidences of reaction disappeared, as a rule, in from two to four weeks after the last treatment, leaving in the majority of these cases a soft, inconspicuous scar. In a number of cases, however, in which infiltration extended somewhat deeper, it was found that while the major part of the growth had disappeared, there remained, even after several weeks, a few isolated or possibly a row of epithelial pearls or nodules, which required a second period of treatment similar to but shorter than the first. The cartilage-like border seen in some cases of superficial carcinoma does not, as a rule, yield readily to the influence of the rays, and better and more prompt results can be obtained, we believe, by removing such borders with the curet before resorting to radiotherapy."

In the treatment of surface carcinomata involving deeper tissues the results have not been quite so satisfactory, and they state: "In attacking these tumors with the x-rays so vigorously as to produce in them a marked inflammatory reaction, we believe there is distinct danger of encouraging extension of the growth in surrounding tissues and of producing metastases." In treating cutaneous tuberculosis the operators find x-rays and the Finsen light equally efficacious. In lupus erythematosus on the other hand, the Finsen treatment was found much superior to x-rays.

From four to ten treatments were usually sufficient to cause the entire disappearance of a group of lesions in psoriasis. In 50 per cent of these cases new lesions returned, but as a rule fewer treatments were required for the removal of the return lesions. For these cases they used a soft tube and made exposures at 10 or 12 inches distance.

Hairs were removed by x-rays in from sixteen to twenty treatments. In most cases there was considerabe return in from six to eight weeks. In alopecia areata the x-rays were not tried, photo-therapy was found to possess no special advantage over other methods of treatment. The x-rays were used advantageously in some cases of acne and rosacea, and were beneficial in several cases of sycosis. Keloid-like scars following burns were softened and thinned by x-rays. Chronic eczema and interigo yielded readily to x-rays, as did also two cases of cutaneous blastomycosis, one of mycosis fungoides and several hyperkeratoses.

The authors conclude that "radio-therapy and photo-therapy are superior to any other known treatment in tuberculosis of the skin and superficial carcinoma. There is no doubt that both photo-therapy and radio-therapy are valuable additions to our methods of treating certain diseases. There is also no doubt that their field of usefulness eventually will be proven much more restricted than that in which they are employed at present. Unfortunately there can be no doubt also that harm is doing and will be done by the action of the x-rays in the hands of the unskilled or the unscrupulous. No one should attempt to employ radio-therapy who has not first carefully studied the subject and followed the work of some expert."

X-Ray as a Therapeutic Agent.

Dr. W. L. Heeve, Brooklyn, N. Y., in the *Therapeutic Gazette,* Oct. 15, 1902, describes the cure of tubercular arthritis of the knee joint with enlarged condyles having uneven edges. X-rays from a high vacuum tube were given for 10 minutes at intervals of 4 or 5 days. A complete cure resulted in six weeks.

Varicose ulcers in the leg of a lady aged 57 were cleansed with hydrogen

peroxid and exposed to the x-rays from a high vacuum tube. A complete cure resulted in two months.

A tubercular ulcer of the leg involving the periosteum of the tibia was completely cured in three months by exposures to a high vacuum tube.

Tubercular swelling of the glands of the neck followed by ulceration was treated nearly three months with medium and high vacuum tubes with good success. The author recommends high vacuum tubes for sarcomata and carcinomata.

While there is no doubt that a good many failures in x-ray treatment have resulted from the use of tubes that are too low in vacuum to reach to the necessary depth with the x-rays, it is just as possible to go to the other extreme and use tubes that are too high for the case on hand. The cases reported by Dr. Heeve are such as require the use of a tube with at least a medium vacuum in order to reach all of the affected tissues. Hence his favorable results with high tubes.

Therapeutic Uses of the Roentgen Rays.

Dr. S. B. Childs, Denver, Colo., in the *Medical News*, January 24, 1903, gives the results of his x-ray treatment of some cases, chiefly of malignant lesions of the skin.

Case 1. Epithelioma of the nose cured in forty-two treatments.

Case 2. Epithelioma of the nose cured in thirty treatments.

Case 3. Lupus erythematosus of nose and lip, five years' duration, cured in less than three weeks.

Case 4. Epithelioma of cheek. Ulcer healed under treatment, but reappeared. Cured in eleven exposures within two weeks.

Case 5. Tuberculous glands of neck. After twenty-four exposures the glands are scarcely perceptible.

Case 6. Lupus erythematosus, twelve years' duration, fifty-three treatments have healed all but a few spots which have not yet been exposed.

Case 7. Secondary carcinoma of the spine, with recurrent nodules in right breast. Cachexia became well marked. After daily exposures for some weeks the patient died. X-rays enabled this patient to pass the last two months of life free from intense suffering.

Case 8. Epithelioma of cheek. After twenty-six exposures healing is almost complete.

Case 9. Pulmonary tuberculosis. After nine weeks' treatment expectoration had ceased. There has been no recurrence. Consolidation and bronchial breathing still present.

Case 10. Lupus erythematosus of nose, cheek and lip; cured in thirty-one treatments.

Case 11. Primary epithelioma of lip. After sixteen exposures there is still slight induration present, which is gradually decreasing.

Case 12. Chronic eczema of twelve years' duration. Completely cured by eight treatments.

Case 13. Hodgkins' disease. Improved.

Case 14. Epithelioma of tragus. Completely healed by sivteen exposures.

The details of the exposures and the degree of vacuum of the tubes used are not given.

X-Rays in Cancer of the Cervix.

Dr. Thos. S. Sculley, of Rome, N. Y., says that even complete hysterectomy is followed by an alarming number of recurrencies with fatal results, hence surgeons should welcome any treatment that gives promise of lessening the mortality. He employed the x-rays in a cauliflower growth of the cervix. The patient began to improve immediately and the growth gradually sloughed away, hemorrhage

ceased, and after a number of applications the woman (who was called away by the illness of her daughter) gave up treatment and now considers herself cured. In the second case the x-ray gave immediate relief from pain, the offensive discharge diminished and ceased entirely in a few weeks. After 15 treatments the cervix is practically obliterated, the patient has gained in weight, and the ulcerating parts are almost entirely healed over. He advises the use of the x-ray in most cases of cervical cancer.

Uterine Carcinoma: Its Treatment by the Combined Use of the Finsen Light and the Roentgen Ray.—George G. Hopkins declares that, from his experience, he believes that the best method of treatment of uterine carcinoma consists in the combined use of decomposed light and x-radiance. The application of the light and radiance requires much thought and skill, the deposits being differently arranged in each case. With the Finsen light the external parts only need the protection of some fabric, but with the Roentgen rays we need metallic protection and, of all metals, lead is the most satisfactory. The patient is placed on her back and the rays so arranged that they will impinge upon the diseased surface. So far as the Finsen rays are concerned, they can play upon the parts for an hour or more, but with the x-ray it is different, the time must be limited and, when hysterectomy has been performed, more caution must be used, as their penetration cannot be limited, and there is no uterus back of the vagina to intercept and partly absorb the rays.—*Medical Record,* Feb. 28, 1903.

X-Ray as Cause of Cancer—The *Medical Standard,* May, 1903, calls attention editorially to the case of a young man employed in treating carcinomas by x-rays, who had received many x-ray burns in his hands, in whose finger a carcinoma developed, on the site of a burn, which defied all but surgical treatment. The danger is a real one. Whatever theory of cancer a doctor may hold, he had better be awake to the danger of infection if his hands carry x-ray burns.

The X-Ray and the Finsen Light in the Treatment of Lupus.

Dr. A. D. Rockwell in the *Medical Record,* April, 1903, discusses the question as to which of these two is the more effective method. With the x-ray comes danger of dermatitis and pigmentation, but the cure is much more rapid than with the Finsen light. The therapeutic effects of the two methods are very much the same. They cure the same diseases. In particular cases the x-ray succeeds where the light fails; perhaps the converse will also be found true.

Increase in Cancer in Ireland.—The report of the Registrar General for Ireland on the prevalence and distribution of cancer shows that there has been a steady increase in the disease in that country. The number of deaths in Ireland in 1871 from that cause was thirty-two per 100,000 of the population; during 1891, forty-six per 100,000; and during 1901, sixty-five for the same approximate figures. In England and Wales the death rate between 1871 and 1900 rose from forty-two to eighty-three per 100,000, and in Scotland from forty-four to eighty. The returns from Bavaria, Holland, Norway, Austria and Prussia show a distinct increase in the death rate for the ten years ending in 1900. The returns from the United States tell the same story, but the percentage in that country goes up much more slowly. In Ireland the County Kerry suffers the least, the deaths being

less than thirty per 100,000. The west of Ireland, generally, comes next. The strip of country from Londonderry to Dublin averages from seventy to ninety per 100,000. The Carlow-Loughall district exceeds 160 per 100,000, as does also the Crossmaglen district in the extreme southwest. No explanation can be found for the physical features on the geography, except, possibly, the damp climate and the cold, clayey soil. The Registrar points out certain facts, which have been substantiated by the information he has collected. He says: "Cancer is spread or generated by unwholesome food in dwellings which are generally in an unsanitary condition. Wounds and injuries are sometimes provocative of disease, as irritation of the lips by excessive smoking: but cancer generally seems to be a constitutional disease. Where one member of a family has been affected by cancer, others often suffer with tuberculosis, and sometimes even with epilepsy, lunacy and idiocy. In many cases it is hereditary, and also to a certain extent infectious. It has been contracted through the lips by using the pipes of sufferers. More than one case has been observed to occur in different families living in the same house, or among those who go from one occupation to another, so I seem to be justified in concluding that the disease is to some extent contagious and infectious." Many English doctors are now convinced that the eating of pigs' flesh in different forms is greatly responsible for the increase of the disease, pointing out that it is most common among the poor, whose chief meat is that of pigs, which is also the case in Ireland, while the disease is extremely rare among the Jews.—*Medical News.*

Primary Cancer of Liver in a Girl Aged Twenty-one Years.—W. J. Thompson reports a case which is interesting from the facts of the patient's age, the absence of any family history, the painless character of the affection, and the lateness at which ascites, nodules, and jaundice appeared. The disease lasted altogether about seven months, and at four months the liver was uniformly enlarged and smooth on the surface, and free from pain, even on pressure. Six weeks later ascites appeared, and a couple of weeks after this a slight jaundice, and slight nodules. The latter soon became well marked. Before death the liver extended as far down as the umbilicus, and when removed from the body weighed 197 ounces. The temperature remained normal until ten days before death, when it fluctuated very much, sometimes going as high as 103 degrees.—*The Dublin Journal of Medical Science.*

Electrical Treatment for Cancer.—The newspaper press asserts that the report of the cancer commission, when made public, will be found to recommend the high frequency electrical treatment.

Will Shortly be Issued.—The Illustrated Review of Physiologic Therapeutics. S. H. Monell, M. D., Editor. A medical journal devoted to a review of the work of each month, placing a complete record of clinical methods and progress at the command of physicians who use therapeutic apparatus. Special rates to advance subscribers. For terms and particulars address, E. R. Pelton, 19 East 16th street, New York City.

Correspondence.

H. P. Pratt, M. D.,
Editor of The American X-Ray Journal,
Masonic Temple, Chicago, Ill.

Dear Doctor:

In reply to yours of recent date, just received, will say that I thoroly believe that in the interest of the patient electro-therapeutics and electro-diagnosis should be confined to medical men.

Only those who are competent to make a diagnosis should be permitted to administer treatement. The treatment of the sick should always be either directly by the physician, or indirectly by carrying out the direct order of a physician.

It has been exceedingly unfortunate for electro-therapeutics that its use has fallen so much into the hands of non-professional men. The application of any remedy should presuppose some qualification for determining the ailment from which the patient is suffering, as well as the patient's general condition.

Our laws should be so framed that the use of these remedies will be confined strictly to the profession. Much of the disrepute in which some very good medical men pretend to hold electro-therapeutics undoubtedly arises from the exploitation of such remedies by the untrained and non-professional.

The profession should see to it that this state of affairs is radically changed. The best and surest way of securing this end is by the profession supporting those who are giving special attention to these forms of treatment. The law should be so framed as to protect those who have spent their time and money in preparation, having first secured a general medical education as a foundation. Local medical societies, which are now organized in almost every county, can do much toward securing the desired results.

Very truly,
Carl E. Black, M. D.
President Illinois State Medical Society.

Dear Doctor:

I take the liberty to ask your advice in regard to the treatment of nevus. I have under my care a case of nevus vasculosis, quite large, situated upon the back of the neck and extending up into the hair line.

Is there any better treatment than electrolysis? If so, which is it? Am trying x-ray, which is purely experimental with me, as I have never seen any literature upon the subject. If you will kindly reply I will appreciate the same. Very cordially yours, D. V. I.

[Vascular nevi are successfully treated by x-rays; use a moderately low tube and push the treatment until there is pronounced redness of the skin. The x-ray treatment is by many preferred to electrolysis since it is painless and less liable to leave a scar. A good many of such cases treated are on record.—Ed.]

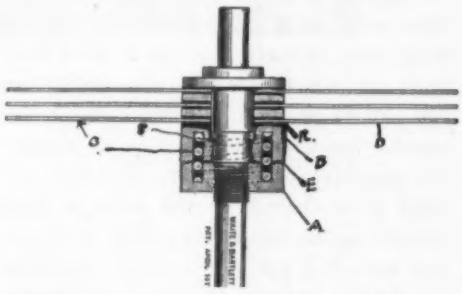


Illustration Showing Our Patent Automatic Device for Preventing Circles from Getting Loose.

A shows a hollow casting threaded on the shaft S. B shows a hollow casting which slides on to shaft S. C is a compression spring which fits in this space in two castings, A and B. R is a soft rubber washer. D is a front circle.

From the above description you can readily see that as the soft rubber washers, which are on each side of the circles, shrink, the compression spring C presses the section B in the direction of the arrow. This leaves an opening at E.

Waite & Bartlett Mfg. Co.

Editor X-Ray Journal:

I have a 16-plate static machine which I have been using since January of this year, and during that time I have had considerable trouble with the rubber insulated cords connecting the No. 11 Mueller tube. The cords

seem to perforate and several streams of blue flame will emit and the light goes out. Since January I have spoiled three sets of cords and now have none that will work satisfactory.

Can you assign the cause and suggest a remedy?

I also see that you suggest a "soft" tube in some cases and again a "hard" tube; how am I to tell whether I have a hard or soft tube? One tube I have had in use since I bought the machine and the other I hold in reserve. I receive a good deal of information through your questions and answers in the JOURNAL. E. H. A.

[To distinguish a soft from a hard tube, look at the palm of your hand by means of the fluoroscope while your tube is in action, if the x-rays are abundant and the tube soft, you will see the outline of the palm very distinctly and the bones a dead black or nearly so. If the x-rays are less abundant, you will find the bones equally black and the soft parts murky, or, possibly, you may see scarcely any light thru them. If the tube is hard (which means that it has a high vacuum), you will find the whole palm, including the bones, translucent; since the x-rays from a tube of this kind pass thru the bones almost as easily as they do thru the soft parts. If the rays are less abundant, or if you are a considerable distance from the tube, the whole hand may appear dark, but on close inspection you will find some light coming thru the thinner parts of the bones, which you do not find when the field is dim with a soft tube.

The perforation of your cords probably results from using a tube in which the vacuum has become too high. In that case, if the cords are allowed to approach each other at all, it is impossible to prevent the sparks from passing thru the rubber. Keep the cords as far apart as possible and regulate your tube to the proper vacuum and you will have no difficulty.—ED.]

EDITOR AMERICAN X-RAY JOURNAL:

Dear Sir:

Why can not I use the x-ray on the spine to cure locomotor ataxia? If the x-ray does so much good in tuberculosis of the lung, why will it not be equally useful in chronic diseases of the spinal cord? I have a case, but hesitate to use the x-ray until I have your opinion. What do you think about it?

R. M. C.

[The x-ray can be used to advantage in locomotor ataxia. If there are points on the spine at which the disease is in active progress these spots will be found tender upon pressure or to sparks from a static machine. The x-ray upon these will if used mildly allay the inflammation and assist in checking the progress of the disease. Upon those parts of the cords where the disease has become chronic the x-ray is of great use in softening and dissolving the constricting hyperplastic connective tissue which is causing nerve degeneration. This condition may also be treated by the static machine. Apply the anode breeze to the tender spots first. When the tenderness has disappeared use on the whole of the affected region of the spine a current from the kathode, which increases the nutrition of the cord and assists in dissolving the hyperplastic tissue.—ED.]

DEAR DOCTOR:

A glow lamp held in the hand of the operator with its base resting on the flesh of a patient on whom the x-rays shine will become lighted.

When the vacuum of a Crookes tube is very high and hard to operate by the usual connective conduction thru its interior, stroke its exterior with a piece of blotting paper from the positive to the negative extremity. This procedure will cause an inductive action thru the glass wall and often coax it into full functional activity. If the vacuum becomes too high for electrical excitation a piece of card board carefully balanced upon its summit will turn round and round impelled by the magnetic vortices in the atmosphere.

JOHN T. PITKIN, M. D.

Radiograph of Lungs of Andrew G. (See page 118, April No. of this Journal.) Second patient cured by X-Ray in Dr. Pratt's Laboratory, 1896.

DEAR DOCTOR:

Male, aged 50, has epithelioma of upper lip of eight or ten years' duration.

Began treatment April first with a low vacuum tube and after about twenty treatments it began to heal and did nicely for about three weeks, now it is beginning to spread upward (would say, however, that the skin between the cancer and eye was of a purple color before I began treatment) destroying only the skin.

I had given him about fifty treatments in all, exposing purple tissue as well as the cancer, discontinuing treatment on appearance of marked redness. Have I made a mistake in treating the devitalized skin as actively as I did the growth? Please advise me in the August number of your JOURNAL.

I saw something not long since about the use of goat lymph in the treatment of these cases. Is there any virtue in it and where can I get it? Very truly, W. E. T.

[It is difficult to advise without seeing the case. If your tube is too low, the rays will not penetrate deep enuf to destroy the cancer. We suggest the use of a tube with a slightly higher vacuum, with a good *x*-ray illumination. Goat lymph has been found a valuable adjuvant in some cases where there seems to be defective nutrition of the tissues. It can be obtained from Dr. Forline, Masonic Temple, Chicago, Ill.—ED.]

POLK'S MEDICAL REGISTER AND DIRECTORY

WAS ESTABLISHED IN 1886.

Do Not Be Deceived By Imitators.

See that the name R. L. POLK & CO.

IS ON THE ORDER BEFORE YOU SIGN IT.

POLK'S is the only complete Medical Directory.
POLK'S is the only Medical Directory having an index to all physicians in the United States.
POLK'S has stood the crucial test of time with increasing popularity. It thoroughly covers the field.

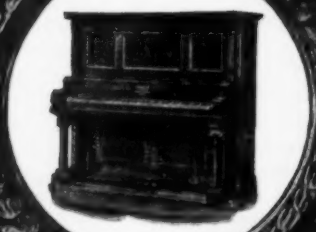
R. L. POLK & CO., Publishers,
DETROIT, MICHIGAN.

SUBSCRIBE NOW.

THE CABLE COMPANY

CONOVER
CABLE
and
KINGSBURY
PIANOS

SOLD BY
DEALERS EVERYWHERE



CATALOGUES MAILED FREE

THE CABLE COMPANY
Offices and Warerooms
CABLE BUILDING
CHICAGO

FACTORIES
CHICAGO AND ST. CHARLES, ILL.

H. PRESTON PRATT, M. D., President. R. S. GREGG, M. D., Secretary.

Dr. Pratt's X-Ray

...AND...

Electro-Therapeutical Laboratory,

MASONIC TEMPLE, CHICAGO.

Long Distance Phone, Central 1910.

The Oldest X-Ray Laboratory, established February 7, 1896, is well equipped for

General Electro-Therapeutical Work of all kinds. Dr. Pratt's long experience enables him to guarantee

No Injurious Effects from the X-RAY or other treatments in his laboratory.

X-Ray Pictures, both snap shots and time exposures.

Cancer, Lupus, and other forms of tuberculosis, inflamed joints, and numerous other ailments, are successfully treated.

Interests of Physicians and Surgeons protected.

Expert Evidence rendered in medico-legal cases.

Professional Correspondence receives prompt attention.

Published Articles on X-Rays and Electro-Therapeutics will be sent on application.

PATIENTS RECEIVED BETWEEN THE HOURS OF
9 A. M. AND 3 P. M.

OFFICE AND LABORATORY

OF

DR. HEBER ROBARTS

303 CHEMICAL BUILDING

Eighth and Olive Streets, ST. LOUIS

PHONE, B 4

BETWEEN the hours of 10 A. M. and 12 M. (Sunday excepted), physicians may call at my Laboratory and arrange hours for instruction in x-ray diagnosis and x-ray therapy. Physicians taking instruction can see patients under treatment with cancer, lupus, rodent ulcers, neuralgias and other diseases rebellious to medicine or inoperable.

When not convenient to come, correspond with me at above address.

HEBER ROBARTS,

Late President of the Roentgen Society of America; Formerly Editor of American X-Ray Journal; Formerly Surgeon to Illinois Central R. R., N. P. R. R., etc. etc.

$99.99 is not the price of this machine. The erroneous notion exists that a good Static Machine can be built for some such price. Skilled labor comes high. The Glass Trust we *must* patronize. Other materials never were so high as at present.

NELSON

NELSON

THE NELSON MACHINE is built on honor and will last a lifetime. It is built more especially for heavy x-ray work, giving the thick, fat and rapid spark required for trunk illumination.

Highly recommended by those who saw it at the Roentgen Society meeting held at Chicago, December 10-11, 1902.

Write for new colortype catalogue.

N. O. NELSON & CO.

171 E. Randolph Street **CHICAGO**

IF WE CAN DEMONSTRATE

to you, that by equipping your office with

THE ALLISON

TABLES AND CABINETS

you are enabled to care for your practice with greater ease and

SAVE ONE THIRD OF YOUR TIME

wouldn't you be convinced that it is economy to purchase such an outfit? WE CAN DO IT.

Send for Catalogue and let us tell you how it is done.

W. D. ALLISON CO.

Alabama and St. Clair Sts.

INDIANAPOLIS

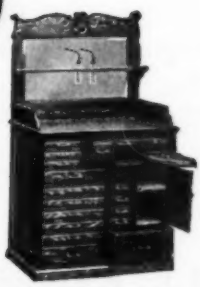


PHOTO-THERAPY

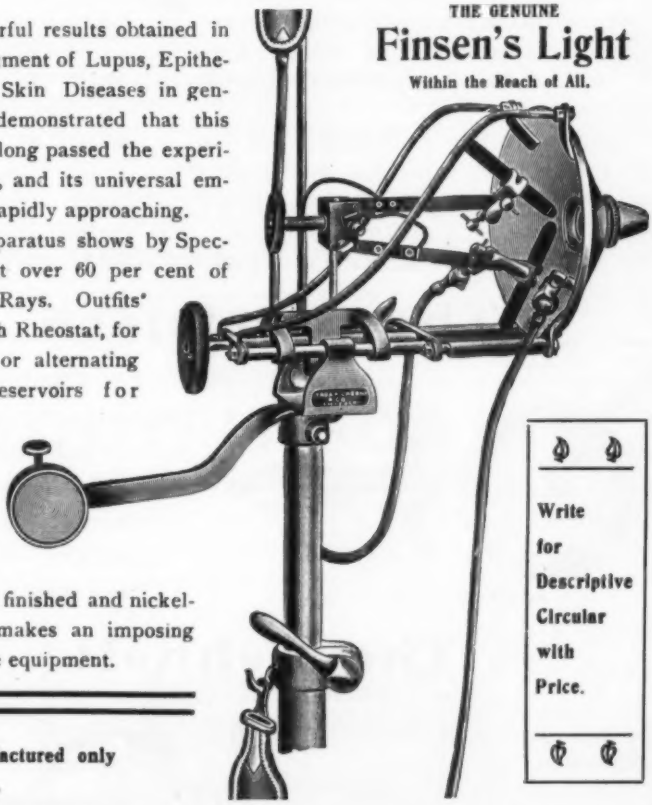
THE SURGERY OF LIGHT.

THE FAMOUS **London Hospital Lamp**

THE wonderful results obtained in the treatment of Lupus, Epitheliomas and Skin Diseases in general have demonstrated that this method has long passed the experimental stage, and its universal employment is rapidly approaching.

This Apparatus shows by Spectroscopic test over 60 per cent of Ultra-Violet Rays. Outfits furnished with Rheostat, for either direct or alternating current. Reservoirs for water circulation and two sets of Rock Crystal Lenses. The apparatus is highly finished and nickel-plated and makes an imposing piece of office equipment.

THE GENUINE
Finsen's Light
Within the Reach of All.



Write for Descriptive Circular with Price.

Manufactured only BY.....

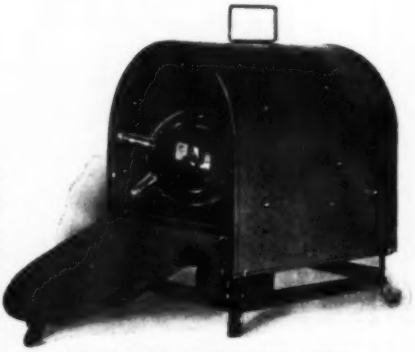
Truax, Greene & Co.,

PHYSICIANS' AND HOSPITAL SUPPLIES.

42-44-46 Wabash Ave., CHICAGO, U. S. A.

American X-Ray Co.

McIntosh's Reduction Oven.



McIntosh's Reduction Oven.

We would especially recommend this apparatus for the reason that through its agency tubes which are not supplied with regulating attachments may be employed and their life prolonged to almost an indefinite period. From experiments made we have found that a plain tube will perform the same function as those which are supplied with delicate regulating attachments, thus obviating danger of breakage, etc.

Alcohol is the fuel employed. The burner consists of a bronze cup filled with steel wool and with this appliance, the highest vacuum tube may be reduced in a few moments.

We would lay special stress on the fact that **to-day** all operators of note consider that the low vacuum tube is of greatest value in Radio-Therapy.

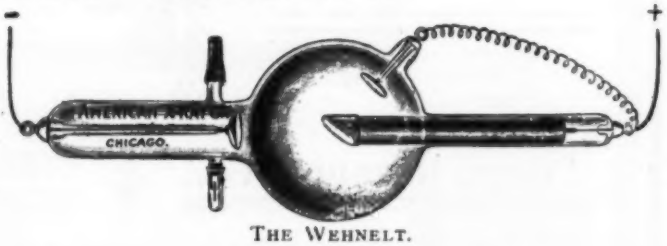
The Gundelach.

THE GUNDELACH.

The Gundelach here shown is especially designed for static machines and small inductive coils. It is an excellent tube and is to-day one of the most popular on the market. We shall be pleased to hear from you.

The Wehnelt.

As its name implies is for use on coils operated by electrolytic interrupters. It will stand the heaviest discharge without breakdown. Communicate with us.



THE WEHNELT.

American X-Ray Co.,

35 and 37 Randolph Street, CHICAGO, ILL.

BOVININE in ANÆMIA

BOVININE overcomes *Anæmia* logically, rationally and radically, for several substantial reasons:

1. Because it supplies the starving organism with the requisites for immediate reparation.
2. Because it needs no preparation or transformation at the hands of the vital machinery before it can be assimilated and converted into living force.
3. Because *Anæmia* results from a form of malnutrition caused by the absolute inertia of the digestive function.

BOVININE comes to the rescue by supplying a vitalized and perfectly compounded pabulum that calls for no chemico-vital effort whatever.

Apply the crucial test—clinical use—at our expense, and convince yourself that our claims are neither extravagant nor exaggerated, but are strictly based on science.

The Bovinine Company

75 West Houston Street, NEW YORK

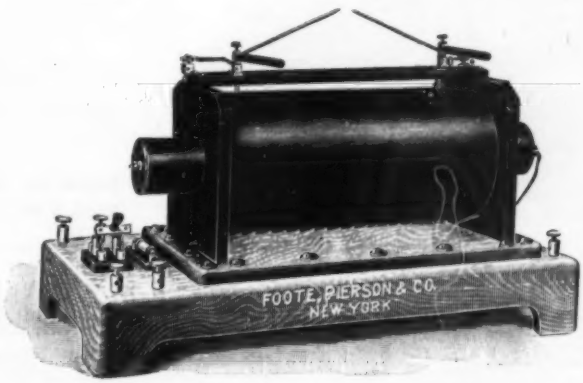
A COMPLETE

X-RAY OUTFIT FOR $175.00,

Consisting of our 12-inch Lytic Coil, mounted as shown in illustration, having the latest designed series and parallel spark points, one Tube, Floor Tube Stand, Rheostat Liquid Interrupter, Fluoroscope with Barium Platino Cyanide Screen and Connecting Cords. All ready for use as soon as set up.

FOR EITHER DIRECT OR ALTERNATING CURRENT.

MOST SIMPLE TO OPERATE



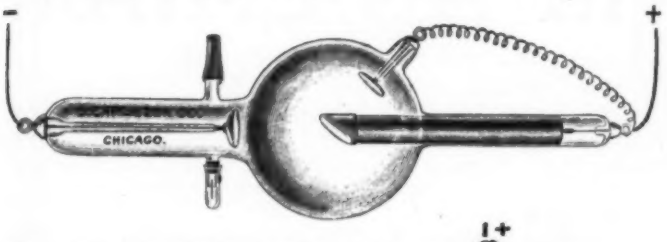
Write for CATALOGUE AND PAMPHLETS on our COMPLETE Line of X-RAY COILS and APPARATUS

FOOTE, PIERSON & CO., - - 82-84 FULTON ST., NEW YORK CITY.

Do You Want the Best **German X-Ray Tubes** at a Rock-Bottom Price?

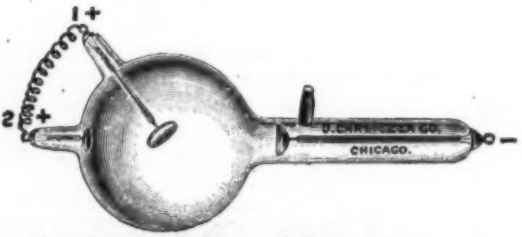
THEN ASK YOUR DEALER FOR THE CELEBRATED

Gundelach and Mueller (Genuine) Tubes



IF HE DOES NOT KEEP THEM, SEND DIRECT TO US. WE HAVE THEM.

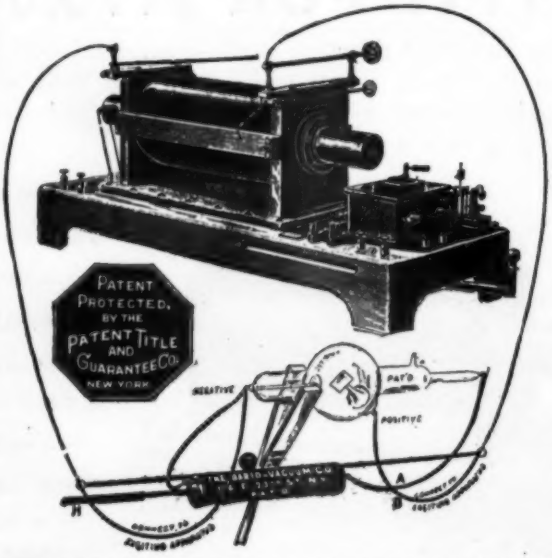
ALL SIZES ON HAND, WITH AND WITHOUT REGENERATING ATTACHMENT. SPECIAL TUBES FOR HEAVY RADIOGRAPHIC WORK. : : :



OTTOMAR CARLICZEK CO.,

908 Schiller Building, CHICAGO.

Have You Ever Considered



What it saves to use Crookes Tubes that can be repaired easily?

Our Tubes

can always be fixed up at a moderate expense.

We Repair Tubes

promptly and efficiently.

Send for Catalogue and Estimates.

BARIO VACUUM CO.

156 East 23rd Street

NEW YORK CITY

The McIntosh Static Machine Has Many Points of Merit.

IT represents years of careful study and embodies all the latest improvements over the difficulties of former years. We are now presenting an apparatus which is unique in the simplicity of its construction, insuring ease in operation and the minimum cost of maintenance. Our experience has taught us that the material we use and the plan of construction we follow is best adapted to produce the results desired. *We are manufacturers for the Profession and our name is a Guarantee of Quality.*

The McIntosh Battery & Optical Co.,

39-41 W. Randolph St., CHICAGO, ILLINOIS

Physicians . . .

ARE DELIGHTED WITH

CRAMER'S

X-Ray Plates

Because, With them results of the greatest excellence are obtained.

Full descriptive Folder concerning X-Ray Plates sent to any address upon application.

For Sale by all dealers in Photo Supplies.

MANUFACTURED BY

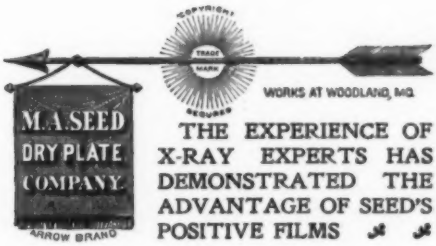
G. CRAMER DRY PLATE CO.

ST. LOUIS, MO.

OFFICES IN

NEW YORK,	CHICAGO	SAN FRANCISCO,
32 East Tenth St.	1211 Masonic Temple	Room 38, 819 Market St.

Seed's Positive Films



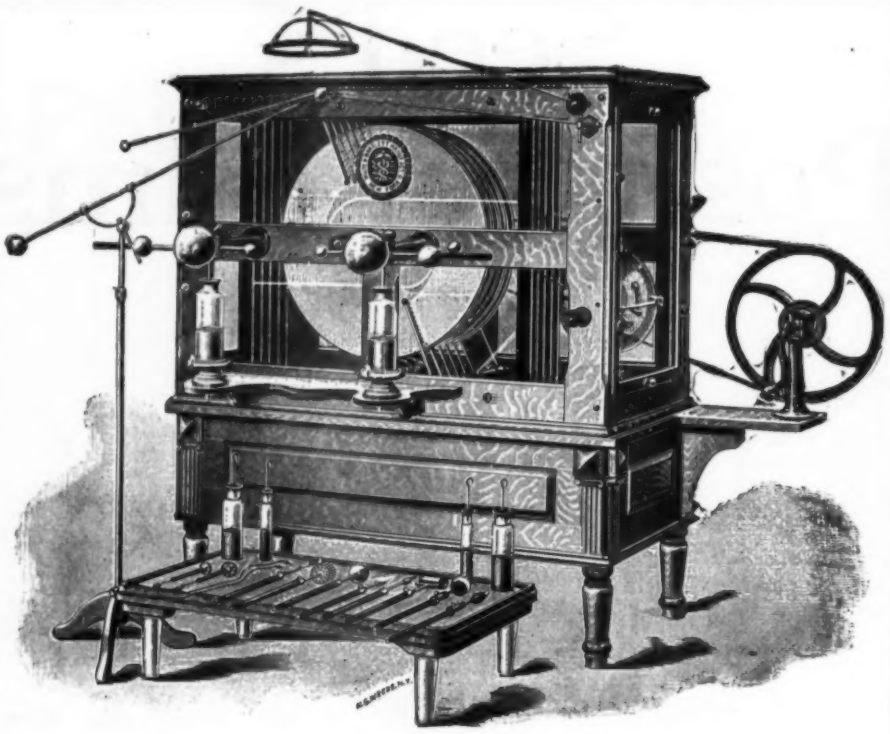
THE EXPERIENCE OF X-RAY EXPERTS HAS DEMONSTRATED THE ADVANTAGE OF SEED'S POSITIVE FILMS

1. They can be used as negatives or as positives equally well.
2. A positive print can be made with an exposure of one-half to three seconds, according to the density of the negative.
3. Developing the positive takes one minute, fixing five minutes. No tedious waiting, as in printing out papers.
4. The positives are semi-transparent, permitting the most perfect examination for foreign substances, dislocations, etc.

We supply Positive films in all sizes. Ask your dealer for price list, or we will mail it to you, on request. Dealers will obtain these goods direct from the factory, as they are not carried in stock in all sizes.

M. A. Seed Dry Plate Co.

ST. LOUIS, MO., 2005 Locust St. NEW YORK, N. Y., 57 E. 9th St.



WASHINGTON, D. C., January 21, 1902.

DR. HENRY E. WAITE, Pres. Waite & Bartlett Mfg. Co.

DEAR DOCTOR:—After three months of capable, unprejudiced, exhaustive labor and research, the authorities at the Barnes Hospital, U. S. Soldiers' Home, Washington, D C., have given us an order for the Waite & Bartlett Mfg. Co. Static Electrical Machine and X-Ray Outfit which has been on trial there in competition with the Van Houten & Ten Broeck's (Otis, Clapp & Co.) apparatus.

Crucial tests, which are absolutely impartial, were made during the period the machines were on trial, because it was the purpose of those in charge of the matter to buy the best apparatus obtainable.

Simultaneously with that trial, another investigation was in progress at the Children's Hospital in this city, where the same makes of apparatus were in full operation, and this institution also concluded that the Waite & Bartlett Mfg.Co. equipment was the best, and we likewise received their order for the complete outfit.

These orders are the outcome of painstaking investigation, and the victory of the Waite & Bartlett Mfg. Co. in both cases is one to be proud of, for their apparatus is thus stamped as the best now in the market, both for therapeutic purposes and X-Ray work.

Another fact to prove the excellence of the Waite & Bartlett Mfg. Co.'s apparatus is that there have been eleven of their Static Machines sold recently in Washington, the purchasers being as follows:

The U. S. Senate.
Dr. F. E. Gibson.
Dr. Robt. Reyburn.
Dr. H. H. Hawxhurst.
The Children's Hospital.
The U. S. House of Representatives.
Dr. F. A. Gardner (two outfits).
Dr. C. H. Heron.
Dr. H. Krogstad.
The Barnes Hospital, U. S. Soldiers' Home.

Yours very truly, Z. D. GILMAN.

N. B.—This is a copy of letter received by us from our agent at Washington, which speaks for itself. Yours truly,

WAITE & BARTLETT MANUFACTURING CO.

217 East Twenty-Third Street **NEW YORK.**

SEND FOR CATALOGUE

SPECIAL

X-RAY MOTORS

For Both Direct and Alternating Currents.

Send for Bulletins Nos. 126 and 140 Descriptive of them.

The Holtzer-Cabot Electric Co.
395 DEARBORN ST.,
CHICAGO

Home Office and Factory: Boston (Brookline), Mass.
NEW YORK: 143 Liberty Street

$22.00 BOSTON $22.00
VIA RAIL AND OCEAN
Meals and Berth on Steamer Included

Big Four and Chesapeake & Ohio Rys.
I. P. SPINING, N. W. P. A. C. & O.
238 Clark St., Chicago

$20.00 NEW YORK CITY $20.00
VIA RAIL AND OCEAN
Meals and Berth on Steamer Included
Berths Reserved in Advance

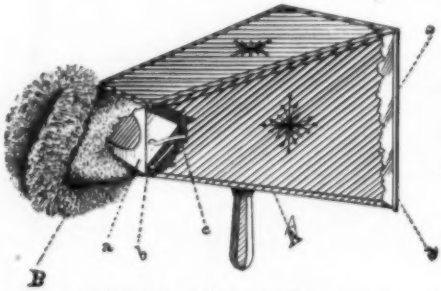
VIRGINIA HOT SPRINGS

Located on Chesapeake and Ohio Railway at an elevation of 2,500 feet, in the Alleghany mountains, offers a charming resort for pleasure seekers, together with the natural conditions so necessary for the comfort of invalids. For descriptive pamphlets, address

I. P. SPINING
Northwestern Passenger Agent,
238 S. CLARK ST., CHICAGO

X-RAY SUPPLIES.

PRATT'S
Improved Fluoroscopes
will fill a long felt want.



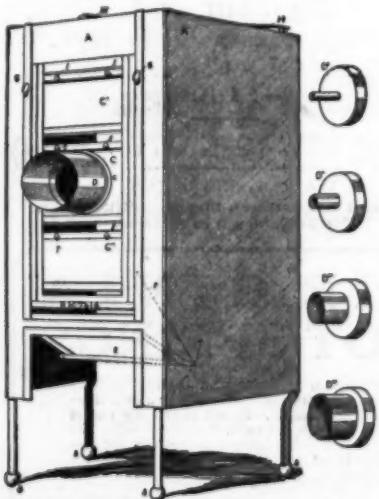
The screen is protected from dust by a glass plate, which also protects the eyes, preventing the decomposed particles from the screen striking the eyes and setting up a conjunctivitis.

The hood is of metal, thus cutting out the reflected rays, which in other fluoroscopes blurs the shadows.

A shutter closes the upper portion when not in use, keeping the compartment free from dust; and when placed on a metal plate it acts as a shield, preventing the further decomposition of the screen by the x-rays which are thrown off from the tube.

The screen is mounted on a metal frame, and warping is impossible. A new screen may be substituted for the old one at a moment's notice.

This Fluoroscope will last several times longer than any other on the market.



Pratt's Standard Protection X-Ray Screen

The x-ray operator who has suffered from the effects of continued exposures will appreciate the value of an appliance as here illustrated. It will afford him perfect protection. Many who have suffered from the effects of constant exposures are now using the apparatus and indorse it. The screen is made of sheet steel, can be folded into small space when not in use. A series of attachments enables treatment of various parts to be given with safety. Screens made in different sizes and shapes embodying the same principle for reasonable price. Will save operator a damage suit.

Write for further information.

AMERICAN X-RAY CO., 35-37 Randolph St. CHICAGO, ILL.

X-Ray Batteries

A SPECIALTY

LIGHTEST WEIGHT
GREATEST EFFICIENCY
BEST WORKMANSHIP
GREATEST DURABILITY

SEND FOR CATALOGUE

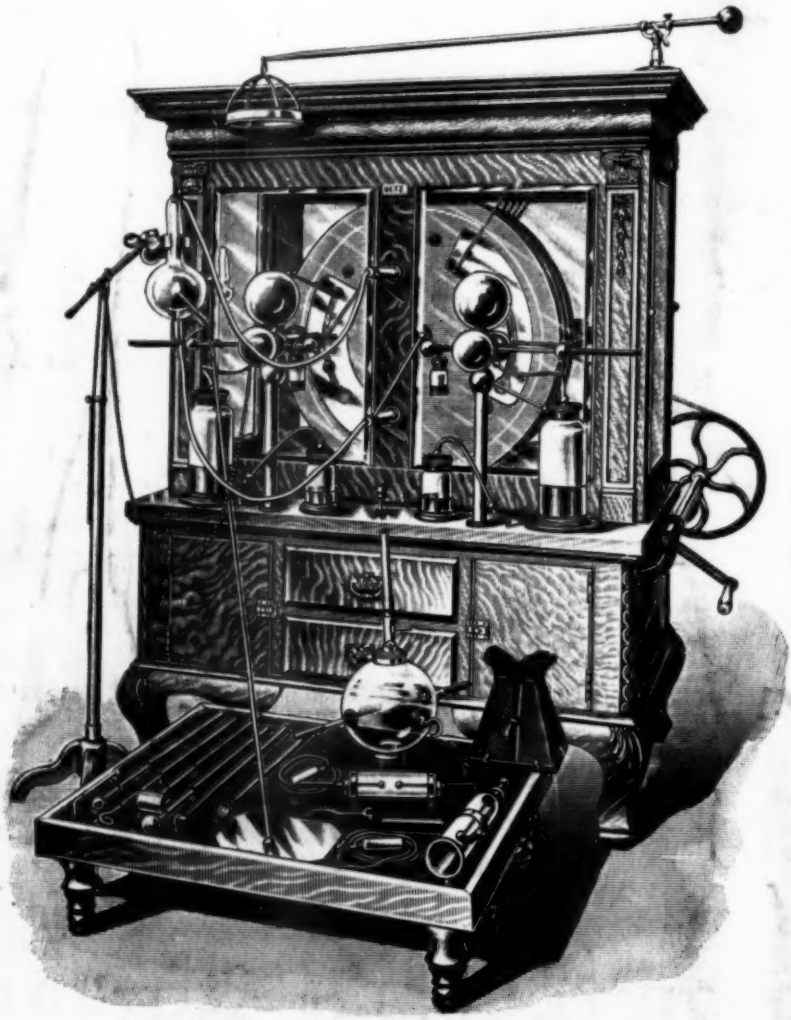
NORTHWESTERN STORAGE BATTERY CO.

465-467 West 22nd St., CHICAGO.

It Is the BETZ 1903

The Finest Machine Made in the World. Send for booklet.

800 BETZ STATIC AND X-RAY OUTFITS NOW IN USE
BULLETIN OF 5,000 ARTICLES FREE



Frank S. Betz & Co.

37 Randolph St. **CHICAGO, ILL.**

less than thirty per 100,000. The west of Ireland, generally, comes next. The strip of country from Londonderry to Dublin averages from seventy to ninety per 100,000. The Carlow-Loughall district exceeds 160 per 100,000, as does also the Crossmaglen district in the extreme southwest. No explanation can be found for the physical features on the geography, except, possibly, the damp climate and the cold, clayey soil. The Registrar points out certain facts, which have been substantiated by the information he has collected. He says: "Cancer is spread or generated by unwholesome food in dwellings which are generally in an unsanitary condition. Wounds and injuries are sometimes provocative of disease, as irritation of the lips by excessive smoking: but cancer generally seems to be a constitutional disease. Where one member of a family has been affected by cancer, others often suffer with tuberculosis, and sometimes even with epilepsy, lunacy and idiocy. In many cases it is hereditary, and also to a certain extent infectious. It has been contracted through the lips by using the pipes of sufferers. More than one case has been observed to occur in different families living in the same house, or among those who go from one occupation to another, so I seem to be justified in concluding that the disease is to some extent contagious and infectious." Many English doctors are now convinced that the eating of pigs' flesh in different forms is greatly responsible for the increase of the disease, pointing out that it is most common among the poor, whose chief meat is that of pigs, which is also the case in Ireland, while the disease is extremely rare among the Jews.—*Medical News.*

Primary Cancer of Liver in a Girl Aged Twenty-one Years.—W. J. Thompson reports a case which is interesting from the facts of the patient's age, the absence of any family history, the painless character of the affection, and the lateness at which ascites, nodules, and jaundice appeared. The disease lasted altogether about seven months, and at four months the liver was uniformly enlarged and smooth on the surface, and free from pain, even on pressure. Six weeks later ascites appeared, and a couple of weeks after this a slight jaundice, and slight nodules. The latter soon became well marked. Before death the liver extended as far down as the umbilicus, and when removed from the body weighed 197 ounces. The temperature remained normal until ten days before death, when it fluctuated very much, sometimes going as high as 103 degrees.—*The Dublin Journal of Medical Science.*

Electrical Treatment for Cancer.—The newspaper press asserts that the report of the cancer commission, when made public, will be found to recommend the high frequency electrical treatment.

Will Shortly be Issued.—The Illustrated Review of Physiologic Therapeutics. S. H. Monell, M. D., Editor. A medical journal devoted to a review of the work of each month, placing a complete record of clinical methods and progress at the command of physicians who use therapeutic apparatus. Special rates to advance subscribers. For terms and particulars address, E. R. Pelton, 19 East 16th street, New York City.

Correspondence.

H. P. Pratt, M. D.,

Editor of The American X-Ray Journal,
Masonic Temple, Chicago, Ill.

Dear Doctor:

In reply to yours of recent date, just received, will say that I thoroly believe that in the interest of the patient electro-therapeutics and electro-diagnosis should be confined to medical men.

Only those who are competent to make a diagnosis should be permitted to administer treatement. The treatment of the sick should always be either directly by the physician, or indirectly by carrying out the direct order of a physician.

It has been exceedingly unfortunate for electro-therapeutics that its use has fallen so much into the hands of non-professional men. The application of any remedy should presuppose some qualification for determining the ailment from which the patient is suffering, as well as the patient's general condition.

Our laws should be so framed that the use of these remedies will be confined strictly to the profession. Much of the disrepute in which some very good medical men pretend to hold electro-therapeutics undoubtedly arises from the exploitation of such remedies by the untrained and non-professional.

The profession should see to it that this state of affairs is radically changed. The best and surest way of securing this end is by the profession supporting those who are giving special attention to these forms of treatment. The law should be so framed as to protect those who have spent their time and money in preparation, having first secured a general medical education as a foundation. Local medical societies, which are now organized in almost every county, can do much toward securing the desired results.

Very truly,

Carl E. Black, M. D.
President Illinois State Medical Society.

Dear Doctor:

I take the liberty to ask your advice in regard to the treatment of nevus. I have under my care a case of nevus vasculosis, quite large, situated upon the back of the neck and extending up into the hair line.

Is there any better treatment than electrolysis? If so, which is it? Am trying x-ray, which is purely experimental with me, as I have never seen any literature upon the subject. If you will kindly reply I will appreciate the same. Very cordially yours, D. V. I.

[Vascular nevi are successfully treated by x-rays; use a moderately low tube and push the treatment until there is pronounced redness of the skin. The x-ray treatment is by many preferred to electrolysis since it is painless and less liable to leave a scar. A good many of such cases treated are on record.—Ed.]

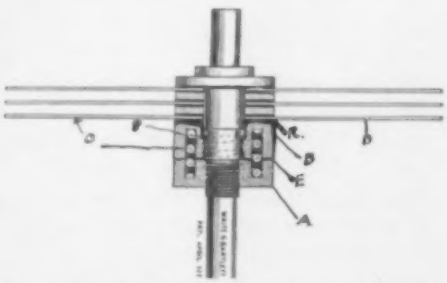


Illustration Showing Our Patent Automatic Device for Preventing Circles from Getting Loose.

A shows a hollow casting threaded on the shaft S. B shows a hollow casting which slides on to shaft S. C is a compression spring which fits in this space in two castings, A and B. R is a soft rubber washer. D is a front circle.

From the above description you can readily see that as the soft rubber washers, which are on each side of the circles, shrink, the compression spring C presses the section B in the direction of the arrow. This leaves an opening at E.

Waite & Bartlett Mfg. Co.

Editor X-Ray Journal:

I have a 16-plate static machine which I have been using since January of this year, and during that time I have had considerable trouble with the rubber insulated cords connecting the No. 11 Mueller tube. The cords

seem to perforate and several streams of blue flame will emit and the light goes out. Since January I have spoiled three sets of cords and now have none that will work satisfactory.

Can you assign the cause and suggest a remedy?

I also see that you suggest a "soft" tube in some cases and again a "hard" tube; how am I to tell whether I have a hard or soft tube? One tube I have had in use since I bought the machine and the other I hold in reserve. I receive a good deal of information through your questions and answers in the JOURNAL. E. H. A.

[To distinguish a soft from a hard tube, look at the palm of your hand by means of the fluoroscope while your tube is in action, if the x-rays are abundant and the tube soft, you will see the outline of the palm very distinctly and the bones a dead black or nearly so. If the x-rays are less abundant, you will find the bones equally black and the soft parts murky, or, possibly, you may see scarcely any light thru them. If the tube is hard (which means that it has a high vacuum), you will find the whole palm, including the bones, translucent; since the x-rays from a tube of this kind pass thru the bones almost as easily as they do thru the soft parts. If the rays are less abundant, or if you are a considerable distance from the tube, the whole hand may appear dark, but on close inspection you will find some light coming thru the thinner parts of the bones, which you do not find when the field is dim with a soft tube.

The perforation of your cords probably results from using a tube in which the vacuum has become too high. In that case, if the cords are allowed to approach each other at all, it is impossible to prevent the sparks from passing thru the rubber. Keep the cords as far apart as possible and regulate your tube to the proper vacuum and you will have no difficulty.—ED.]

EDITOR AMERICAN X-RAY JOURNAL:

Dear Sir:

Why can not I use the x-ray on the spine to cure locomotor ataxia? If the x-ray does so much good in tuberculosis of the lung, why will it not be equally useful in chronic diseases of the spinal cord? I have a case, but hesitate to use the x-ray until I have your opinion. What do you think about it?

R. M. C.

[The x-ray can be used to advantage in locomotor ataxia. If there are points on the spine at which the disease is in active progress these spots will be found tender upon pressure or to sparks from a static machine. The x-ray upon these will if used mildly allay the inflammation and assist in checking the progress of the disease. Upon those parts of the cords where the disease has become chronic the x-ray is of great use in softening and dissolving the constricting hyperplastic connective tissue which is causing nerve degeneration. This condition may also be treated by the static machine. Apply the anode breeze to the tender spots first. When the tenderness has disappeared use on the whole of the affected region of the spine a current from the kathode, which increases the nutrition of the cord and assists in dissolving the hyperplastic tissue.—ED.]

DEAR DOCTOR:

A glow lamp held in the hand of the operator with its base resting on the flesh of a patient on whom the x-rays shine will become lighted.

When the vacuum of a Crookes tube is very high and hard to operate by the usual connective conduction thru its interior, stroke its exterior with a piece of blotting paper from the positive to the negative extremity. This procedure will cause an inductive action thru the glass wall and often coax it into full functional activity. If the vacuum becomes too high for electrical excitation a piece of card board carefully balanced upon its summit will turn round and round impelled by the magnetic vortices in the atmosphere.

JOHN T. PITKIN, M. D.

Radiograph of Lungs of Andrew G. (See page 118, April No. of this Journal.)
Second patient cured by X-Ray in Dr. Pratt's Laboratory, 1896.

DEAR DOCTOR:

Male, aged 50, has epithelioma of upper lip of eight or ten years' duration.

Began treatment April first with a low vacuum tube and after about twenty treatments it began to heal and did nicely for about three weeks, now it is beginning to spread upward (would say, however, that the skin between the cancer and eye was of a purple color before I began treatment) destroying only the skin.

I had given him about fifty treatments in all, exposing purple tissue as well as the cancer, discontinuing treatment on appearance of marked redness. Have I made a mistake in treating the devitalized skin as actively as I did the growth? Please advise me in the August number of your JOURNAL.

I saw something not long since about the use of goat lymph in the treatment of these cases. Is there any virtue in it and where can I get it? Very truly, W. E. T.

[It is difficult to advise without seeing the case. If your tube is too low, the rays will not penetrate deep enuf to destroy the cancer. We suggest the use of a tube with a slightly higher vacuum, with a good x-ray illumination. Goat lymph has been found a valuable adjuvant in some cases where there seems to be defective nutrition of the tissues. It can be obtained from Dr. Forline, Masonic Temple, Chicago, Ill.—ED.]

POLK'S MEDICAL REGISTER AND DIRECTORY

WAS ESTABLISHED IN 1886.

Do Not Be Deceived By Imitators.

See that the name R. L. POLK & CO.

IS ON THE ORDER BEFORE YOU SIGN IT.

POLK'S is the only complete Medical Directory.
POLK'S is the only Medical Directory having an index to all physicians in the United States.
POLK'S has stood the crucial test of time with increasing popularity. It thoroughly covers the field.

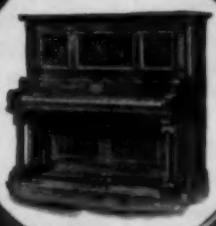
R. L. POLK & CO., Publishers,
DETROIT, MICHIGAN.

SUBSCRIBE NOW.

THE CABLE COMPANY

CONOVER CABLE and KINGSBURY PIANOS

SOLD BY DEALERS EVERYWHERE



CATALOGUES MAILED FREE

THE CABLE COMPANY

Offices and Warerooms

CABLE BUILDING

CHICAGO

FACTORIES

CHICAGO AND ST. CHARLES, ILL.